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# COMPUTERWORLD

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## UNIX: The operating system of the '80s? Major developments at Capitol meeting

### DEC unwraps Ultrix-32

WASHINGTON, D.C. — Digital Equipment Corp. last week became the second major firm to introduce a Unix-based operating system when it announced Ultrix-32 for mid-range and high-end VAX-11 superminis. DEC's announcement at the Uniform International Conference of Unix Users here came just one week after IBM unveiled its Unix version for the Personal Computer and Personal Computer XT.

Ultrix-32 joins VMS as the second operating system for the VAX-11 line. Based on technology from the University of California at Berkeley's Fourth Berkeley Software Distribution, Ultrix-32 is targeted principally at laboratories, universities and technical and commercial OEMs for value-added system development, computer-aided design and robotics.

The software is an interactive, virtual memory, time-sharing system that supports up to 16 users on a VAX-11/730, more than 32 users on a VAX-11/750 and 64 or more users on a VAX-11/780. It reportedly features a hierarchical file system with demountable volumes for improved performance, sharing of I/O resources among processes and asynchronous process execution.

Users who order the Ultrix-32 system will receive a Unix binary license directly from DEC, a spokesman said. An Ultrix-32 license can also be ordered as part of a VAX-11 System Building Block for new system purchasers or as an add-on product for either VAX/VMS users or VAX-11 customers with a third-party Unix license.

Deliveries of the Ultrix-32 operating system are planned for late spring. System Building Block kernels, including a VAX-11 processor, 2M bytes of memory and Ultrix-32 software, are priced at \$23,500 for the VAX-11/730, \$52,500 for the VAX-11/750 and \$150,500 for the VAX-11/780 from DEC, Maynard, Mass. 01754.

### AT&T, Digital Research tied

By John Gallant  
CW Staff

WASHINGTON, D.C. — AT&T Technologies, Inc. and Digital Research, Inc. last week jointly announced a "cooperative relationship to expand the number of Unix System V applications software offerings."

Speaking at a press session at the Uniform International Conference of Unix Users here, Jack Scanlon, vice-president of computer systems for AT&T, and Digital Research President John Rowley highlighted plans to develop jointly a Unix System V applications library for microcomputers. The applications library will include a line of applications and systems software designed to operate on several different microprocessors that run Unix System V.

For Digital Research, the agreement represents another major step into the Unix marketplace since it comes hot on the heels of the company's recently announced agreement with Motorola, Inc. (see story page 6). That agreement calls for Digital

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**Other Unix-related developments:**  
■ *System V was not the only standard promoted for the Unix operating system (Page 4).*

■ *Digital Research, Inc. said it will implement its Concurrent DOS operating system on Motorola, Inc.'s VME/10, a 68000-based microcomputer that runs under Unix System V (Page 6).*

■ *IBM's announcement of a Unix-based operating system for its Personal Computer was heralded as a powerful endorsement of the multiuser microcomputer and programmer workstation concepts (Page 6).*

### System V enhanced

By John Gallant  
CW Staff

WASHINGTON, D.C. — AT&T Technologies, Inc. last week announced an enhanced version of Unix System V and three software packages for text processing, application programming and software development. The introductions were made here at the Uniform International Conference of Unix Users.

Dubbed Release 2, AT&T Technologies' enhanced version of Unix System V will run programs about 5% to 10% faster than the present operating system in a typical program development environment, according to an AT&T spokesman. In addition, the user-to-operating-system interface functions have been improved, resulting in "significant efficiency improvements."

The enhanced Unix also offers greater job control, which will permit the user to shift between processing tasks, the spokesman noted. The release also provides electronic mail capabilities and includes reorganized and expanded documentation.

The first of the three packages announced last week, Documenters' Workbench text processing, allows a user to format text for display and typesetting. It reportedly supports a full range of output devices from printing terminals to typesetting equipment.

The Unix System Basic Language package is said to accommodate programming of simple applications for business and scientific environments. It reportedly includes several debugging features and is compatible with most microcomputer Basic software.

The third package, the Motorola Software Generation System, is for users developing software on Motorola, Inc.'s

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### INSIDE

Say good-bye to Burroughs Corp.'s B6900 mid-range processors. Say hello to the A 9, poised to take on the IBM 4361 and 4381. Page 2.

The market for decision support systems has a new participant: Cincom Systems, Inc. Page 2.

Don't expect Trilogy Ltd.'s promised shipments of high-performance IBM-compatible mainframes to be on time. The company is having problems with the prototype semiconductor wafer around which the CPUs will be built. Page 12.

Better late than never? Raytheon Data Systems Co. made a limited entry

into the crowded office automation arena last week. Page 13.

Programmers will be the employees most in demand during 1984, and corporate data processing and management information systems directors can expect median salaries of \$65,400, Fox-Morris Personnel Consultants, Inc. found in a recent survey. Page 14.

In war-torn Nicaragua, special problems plague DP directors. Page 19.

Americans will be able to mail-order a \$499, 32-bit system from Sinclair Research Ltd.'s U.S. operation this fall, the company promised this month. Page 22.

Pieces of architecture are already in place, so integrated services digital networks may soon be more than just a vision. Page 49.

What's Nu at Texas Instruments, Inc. is a 32-bit processor. Page 73.

Topping the wish lists of corporate IBM Personal Computer users are faster machines and links with mainframes. Page 81.

Things look like they're looking up for Digital Equipment Corp. After five straight reports of declining earnings, the company will today announce strong quarterly gains. Page 95.



## NEWS

# Burroughs replaces B6900

By Patricia Keefe  
CW Staff

NEW YORK — Burroughs Corp. last week replaced its B6900 line of mid-range processors with the A 9, a three-model series said to compete with IBM's recently announced 4361 and 4381 processors.

The A series, which Burroughs' Chairman of the Board and Chief Executive Officer W. Michael Blumenthal said will be enhanced to replace the entire B series of processors eventually, represents a departure from the internal architecture used in earlier systems.

The most notable architectural change is the addition of three logical processors to the A 9's CPU. The logical processors allow the system to execute up to three internal operations at one time. They also allow the system to balance up to 10 tasks within the master control program. This gives the A 9 what amounts to a pipelined architecture, noted Leonard M. Bertagnolli, product manager of systems program management for Burroughs' Systems Products Group.

## Consists of three models

The A 9 line consists of three models — B, D and F. The low-end A 9 Model B is roughly equivalent to IBM's 4361 processor. The top-of-the-line A 9 Model F is roughly equivalent to the IBM 4381. The Model B is field upgradable to the Model F or to the mid-range Model D processors, Burroughs said.

Each of the A 9 models can be equipped with a minimum of 6M bytes of main memory. The mid-range Model D can accommodate up to 12M bytes of main memory, and the Model F can use a maximum of 24M bytes of main memory, Burroughs said.

The A 9 systems use basically the same software and communications devices used on Burroughs' earlier B5000 and B6000 series processors. These include: Network Control, Message Control, Data Management, Work Management, Report Management, File Management, Text Editing, System Information Management and Network Management (Burroughs Network Architecture), Burroughs said.

According to Bertagnolli, the A 9 can run existing 5000 and 6000 series applications without modification. He added, however, that users may



Burroughs A 9

want to recompile 5000 and 6000 series programs eventually to make the most efficient use of the multiple task functionality offered by the logical processors.

Fred R. Meier, vice-president of program management of the Systems Products Group, noted that the A 9 requires half to three-fourths less power, air conditioning and floor space than the B6900. He added that the A 9 can accommodate up to 24M bytes of main memory, four times that of the B6900.

He also pointed out that the A 9 can support a data transfer rate of 6M byte/sec in a burst mode and 4.5M byte/sec in a sustained mode. Meier added that the A 9 offers roughly two times the internal throughput of the B6900 in sustained mode.

The vendor's Master Control Program provides the resource management for all three models of the A 9 family, Burroughs said.

Remote diagnostic capabilities, board-level replacements and customer support centers are also offered with the A 9, the vendor noted.

A basic configuration of the A 9 Model B processor with 6M bytes of main memory costs \$351,100. The unit costs \$14,831/mo on a five-year lease. The A 9 Model D with 6M bytes of main memory costs \$433,900 or \$17,973/mo on a five-year lease. The top-of-the-line Model F with 6M bytes of main memory costs \$613,900 or \$24,982 on a five-year lease plan, Burroughs said.

Burroughs is headquartered at Burroughs Place, Detroit, Mich. 48232.

## Tough competitor or appeasement?

By Tom Henkel  
CW Staff

NEW YORK — Burroughs Corp. executives bill the company's newly announced A 9 processor as a new technology replacement for the firm's B6900 line of machines. Two industry analysts contacted last week had a different assessment. They were convinced the new processor was designed more as an appeasement to Burroughs' user base than as a tough competitor of the upper end of IBM's 4300 line.

Burroughs appears to be playing the same basic marketing game as IBM in that it is steering away from adopting a new mainframe architecture strategy in favor of short-term performance enhancements to existing architectures, noted Tom Wilmott, an analyst with the Framingham, Mass., market research firm, International Data Corp.

Pointing out that all mainframe manufacturers will eventually be forced to depart from their current system architectures in order to achieve significant price/performance breakthroughs, Wilmott maintained that one of the best ways Burroughs could gain ground on IBM is to announce a series of processors that are so technologically superior to the IBM line that IBM users would have to take notice. The A 9 does not appear to offer that potential, he said.

Frank Gens, director of information systems research for The Yankee Group, a Boston-based market research firm, agreed with Wilmott's assessment. He added that the A 9 appears to deal with only one of Burroughs' two most pressing problems, that of preserving its current user base. Burroughs, Gens said, must not only preserve its current users, but also start to steal some business away from IBM if it plans to remain a competitor in the mainframe business.

The A 9 announcement appears to be a significant enhancement for current Burroughs users, but it will probably fail to turn the heads of current IBM users, Gens said.

Both Wilmott and Gens agreed that other mainframe vendors, such as NCR Corp. and Sperry Corp., have decided to market systems to specialized market niches rather than repeatedly go head to head with IBM.

"There seems to be a sense that Burroughs is not clear what its next step is going to be," Gens said, adding that a clear indication of what its large systems strategy will be over the next 10 years could significantly boost Burroughs' standing in the mainframe market.

# Cincom enters decision support system market

By Paul Gillin  
CW Staff

CINCINNATI — Cincom Systems, Inc. last week entered the decision support system market with a set of integrated mainframe-based applications designed around its Mantis fourth-generation language and application development system.

Cincom also announced a micro-mainframe link that provides real-time upload and download facilities between an IBM Personal Computer and a mainframe running Mantis. In addition, the company announced plans to make Mantis available on IBM's Personal Computer XT/370 when that system becomes available late this summer.

The decision support applications, called the Manage User Series, include separate mainframe software for text processing (Mantext), graphics (Mangraf) and a three-dimensional spreadsheet (Mancalc). Written in

Mantis, the programs can move data, text and graphics freely between the applications and can call Mantis routines or be called by Mantis programs, a spokesman said.

Mantext performs most standard word processing activities and can combine data from existing files with newly created text, Cincom said. The software is oriented primarily toward creating large, structured documents and developing Mantis applications that require mixing text and data.

Mancalc is a three-dimensional spreadsheet with a maximum size of 999 rows by 999 columns by 999 pages.

Using Mantis, Mancalc can access data stored in Cincom Total and TIS files or IBM DL/1 and Vsam files and load it directly into the spreadsheet. When integrated with Mantis, a Mantis program can call Mancalc to perform a calculation during program

execution and return to the program.

Mangraf produces graphics as direct output from an on-line application, Cincom said. It can access any data file in the corporate data base, perform statistical analysis and present the results in predefined graphs. Multiple graphs can be mixed on a screen and may incorporate data from multiple data bases. The product runs under IBM's CICS and requires IBM's Graphic Data Display Manager.

Mantis is a prerequisite for Mangraf and Mancalc. Mantext can be purchased separately. Both Mantext and Mancalc are compatible with Cincom's Environ/1, CICS or CMS operating environments. Mantext licenses for \$40,000 in a large IBM DOS environment, \$33,000 in a small DOS environment, \$50,000 in an IBM OS environment and \$60,000 under IBM's IMS/DC. Mangraf licenses for \$16,500 and Mancalc licenses for

\$19,500, the vendor said.

PC Contact allows real-time downloading and uploading between IBM mainframes and IBM Personal Computers using Mantis. The software does not require intermediate files to pass data between the micro and the mainframe.

PC Contact gives the user the ability to perform interactive application development on the Personal Computer by making it appear that Mantis is running locally, the spokesman said.

PC Contact will be available in April at a price of \$60,000 for the mainframe version and \$1,000 per Personal Computer.

Cincom also said it plans to make a version of Mantis, called Cricket, available on the IBM XT/370 in September. Pricing and detailed technical specifications were not available.

Cincom is located at 2300 Montana Ave., Cincinnati, Ohio 45211.



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## NEWS

## PACKAGES from page 1

68000 microprocessor. The package is said to ease software development by allowing developers to program in either the C language or in assembly language.

The enhanced version of System V is priced at \$43,000 for the initial CPU. For a single CPU, the Documenters' Workbench costs \$4,000; the Basic System, \$5,000; and the Motorola Software Generation System, \$7,500. AT&T Technologies can be reached through P.O. Box 25000, Guilford Center, Greensboro, N.C. 27420.

## Other announcements

Other major Unix-related announcements made at last week's Uniform Conference included the following:

■ **Data General Corp.** unveiled a series of enhancements for its UNIX/VS operating system, which is integrated with its 32-bit AOS/VS for its Eclipse MV family of minicomputers.

According to DG, the UNIX/VS enhancements were derived from AT&T's Unix System V operating system and include features compatible with the University of California at Berkeley's 4.1 Berkeley Software Distribution. The enhancements also include a screen editor, support for a variety of terminals and a C language C-Shell user interface. The system's visual editors reportedly enable users to display a portion of their data as a window into the file so information can be reviewed or changed when necessary.

The enhanced UNIX/VS is said to offer a choice of user interfaces, including the Berkeley C-Shell or the AT&T Bourne Shell. DG said it expects shipment of the enhancements in 90 days.

Initial license for UNIX/VS will range in price from \$9,845 for 16 users to \$27,845 for more than 64 users. DG is based at 4400 Computer Drive,

Westboro, Mass. 01580.

■ **Oracle Corp.** added Unix System V to the family of operating systems supporting its Oracle relational data base management system (DBMS). In the Unix environment, disk space is allocated to the Oracle DBMS, and within this file system, Oracle allocates its own system tables, data dictionary and user tables. Oracle I/O requests bypass the Unix file system and disk buffer pool to go directly to the disk drivers, the vendor said, guaranteeing transaction integrity within the data base.

The System V version of Oracle operates in multiuser, Unix-based minicomputer and microcomputer systems.

The microcomputer version is priced at \$600 for a single user and at \$2,000 for up to eight users. For use on a Digital Equipment Corp. VAX-11/730 superminicomputer under the Unix System V, the Oracle DBMS is priced at \$24,000, a vendor spokesman said. Oracle is located at 2710 Sand Hill Road, Menlo Park, Calif. 94025.

■ **Absolut Software, Inc.** introduced a line of business software modules for a wide range of processors running under Unix operating systems. As a group, the software packages are said to provide a sophisticated system of order entry, sales reporting, inventory and stock control, back-order and reorder data and billing detail.

The seven modules include manufacturers distribution, wholesale distribution, multistore retail distribution, mail order sales, accounts payable and receivable and a general ledger package.

Priced from \$12,000 to \$100,000 depending on the user's system and the modules chosen, they run on most 16- and 32-bit microcomputers with at least 20M bytes of hard disk storage, as well as on minicomputers and mainframes capable of operating in the Unix environment.

Absolut Software is based at 2001 Beacon St., Boston, Mass. 02146.

## Firms back Isis as Unix standard

WASHINGTON, D.C. — Though it was not obvious from the posture of AT&T and others at the Uniform Conference here last week, System V is not the only standard being promoted for the Unix operating system.

Four vendors of third-party software for the increasingly popular Unix system held a press conference to announce the formation of a standards consortium "dedicated to the promotion of interchanges of information between Unix applications." The four firms — Access Technology, Inc.; Quadraton, Inc.; Software Express, Inc.; and Unify Corp. — are backing the Independent Software Information Standard (Isis), a new Unix standard that, they said in prepared remarks, provides Unix users with "a superior level of integration, especially in the office automation area."

Representatives of the four vendors said that the consortium will be open to all third-party Unix software producers who agree to maintain compatibility with the standard interface as it evolves.

In a joint statement at the conference, spokesmen from the Isis consortium said they believe Unix's power and portability will make it a major operating system in business environments during the current decade. Jeff Hulton, vice-president of Access Technology, was selected chairman of the group, which also includes Karl Klessig, president of Quadraton; William Adams, vice-president of marketing for Software Express; and Nico Nierenberg, president of Unify.

## UNIX from page 1

Research to implement its Concurrent DOS operating system on Motorola's VME/10 microcomputer.

According to Rowley, the applications library will focus on three areas: software development and programmer productivity tools, commercial application packages and science and engineering applications. Scanlon said the library will initially target Intel Corp.'s 286 and Motorola's 68000 microprocessors.

Scanlon said also that AT&T viewed the applications library as "a critical step in the growth of Unix System V as an industry standard." AT&T began licensing Unix System V last year, and Scanlon said the Digital Research agreement, and possible similar future pacts, will enable the multitasking operating system to operate on "everything but the kitchen sink." Both Digital Research and

AT&T will market applications library products, the first of which will be out in the last quarter of 1984.

According to Rowley, the two firms will jointly select "high-quality application packages" developed by independent software vendors and targeted toward System V. He said that AT&T and Digital Research will then "package and merchandise those products in a consistent manner." Rowley said the selection process is currently under way.

"We're convinced that within the desktop marketplace, Unix will be a high-dollar volume player. We expect to take a large chunk of that Unix market," Scanlon said. The AT&T executive also said that the divested giant plans to develop its own packages for inclusion in the library.

Both Rowley and Scanlon said the joint agreement bodes well for independent software vendors, who will soon be able, in Scanlon's words, "to

port their Unix System V products across a wide range of hardware." He added that the move opens up the "entire marketplace" to the third-party developers.

Rowley said the merchandising aspects of the deal would be a positive force for development firms that lack "their own marketing strength." Scanlon would not divulge which microcomputers the applications library will operate on, but he said the models to be chosen will be based on the "number of boxes sold, focusing on the high-volume markets."

Neither Rowley nor Scanlon would expand on the specific details of the joint Digital Research and AT&T arrangement or on the procedures through which the selection and marketing of the products will take

place. "Our primary focus at this time is microcomputers," Scanlon said. "But we fully intend to utilize the portability of Unix. We intend to make these same applications available across the entire price and performance range."

Scanlon added that the move would greatly increase the commercial value of Unix System V, which AT&T has chosen to support as the industrywide standard for the Bell Laboratories-developed operating system. When asked what effect the recently penned deal would have on the marketability of his firm's existing CP/M operating system, Rowley replied that Digital Research viewed the move as an opportunity to expand into another high-volume operating system environment.

## IBM's '83 profits up \$1 billion

ARMONK, N.Y. — IBM's 1983 profits jumped by more than \$1 billion over 1982's earnings of \$4.4 billion, the company reported last week.

Chairman John R. Opel, in releasing preliminary year-end financial results, said the \$5.48 billion in earnings could be credited to "trends established in 1982" and the "strength of the IBM product line."

Revenues totaled \$40.1 billion, up 16.9% from 1982.

Although the company's income from rentals was down 17%, sales jumped 38.4% and services rose

19.4%.

Per share earnings totaled \$9.04 for 606.8 million outstanding shares, compared to \$7.39 per share on 596.7 million shares the previous year. Earnings before income taxes were \$9.94 billion in 1983, an increase of 24.7%.

For the fourth quarter of 1983, the company earned \$1.86 billion or \$3.06 per share on revenues of \$12.89 billion. The 1982 fourth quarter profits were \$1.5 billion on revenues of \$11 billion for earnings of \$2.50 per share.

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## NEWS

# Digital Research, Motorola ink Unix-centered pact

By John Gallant  
CW Staff

WASHINGTON, D.C. — Motorola, Inc. and Digital Research, Inc. announced a joint agreement here last week that calls for Digital Research to implement its Concurrent DOS operating system on Motorola's VME/10 microcomputer. Both companies hailed the agreement as a major move toward standardization of operating system software.

A Motorola spokesman said the move will enable full portability of application software between Unix System V, which already operates on the VME/10, and Digital Research's Concurrent DOS and its CP/M operating systems for 68000 microprocessor-based systems.

Concurrent DOS, which is written in C and is said to be a multitasking system, also provides support for IBM's PC-DOS, allowing application software developed for that system in a high-level language to be ported to the VME/10 as well.

The agreement, announced at the Uniform International Conference of Unix Users here, also calls for Motorola and Digital Research to develop 19 software packages for the VME/10 under CP/M and Concurrent DOS. Concurrent DOS reportedly also includes windowing capabilities, local-area net and graphics support.

According to the spokesman, seven of the packages to be developed will support the VME/10 Unix System V operating system and will include Digital Research's programming languages.

The Digital Research programming languages reportedly provide application portability from CP/M and Concurrent DOS to Unix System V on the VME/10. The packages, CP/M, Concurrent DOS and a library of languages will be maintained and supported by Digital Research and will be marketed by both it and Motorola. When the development project is completed, it will be possible to transport source code from Concurrent DOS to Unix System V with little or no code conversion required, according to both firms.

During the first quarter of 1984, a number of CP/M products will be introduced, including a Digital Research C package, Pascal MT+ and C Basic compiler. The Concurrent DOS and Unix System V/68 products, which will be available at the end of 1984, will be source-code-compatible with CP/M-68000 languages.

The packages will be priced between \$350 and \$600 from Digital Research, P.O. Box 579, 160 Central Ave., Pacific Grove, Calif. 93950, and Motorola, P.O. Box 20912, Phoenix, Ariz. 85036.

# IBM crosses AT&T border

By John Gallant  
CW Staff

RYE BROOK, N.Y. — IBM made the first foray into a segment of the microcomputer marketplace where it seems certain to lock horns with AT&T when it announced a Unix-based operating system for its Personal Computer and Personal Computer XT [CW, Jan. 16]. The IBM operating system reportedly includes facilities for program development, text processing and operation of a wide variety of existing application programs.

Dubbed the Personal Computer Interactive Executive (PC/IX), the operating system offers a full screen editor in addition to standard Unix system features. Personal Computer users will reportedly be able to process several tasks simultaneously with PC/IX.

PC/IX can reside with other operating systems on fixed disk so that more than one operating system is available to the user. Moreover, it is said to provide programs for file transfer to and from IBM's PC-DOS 2.0 operating system.

## Comprehensive program

The Unix-based operating system, developed for IBM by Interactive Systems Corp. of Santa Monica, Calif., is said to be a comprehensive program product featuring a command language that interprets a user's commands for the system; the high-level C language, designed for structured programming; a file moni-

toring system; word processing; a hierarchical file system for file organization; and program development tools.

According to IBM, PC/IX is a recompiled set of Unix system source statements with a redesign of essential portions of code to improve performance and reliability. The full screen editor reportedly features multiple windows, which display one or more files and permit cursor positioning and window movement on the display screen.

IBM also said that keyboard functions can be used to reduce typing commands and that, by moving the cursor to the appropriate position, text can be moved to different positions within a file or to different files through "cut and paste" operations.

The 19 PC/IX diskettes are grouped into major functions such as basic system programming, communications and text processing, according to IBM.

The system runs on the Personal Computer with fixed disk expansion and the Personal Computer XT. All configurations require at least 256K bytes of memory, one dual-sided diskette drive and one 10M-byte fixed disk drive.

With a one-time license charge of \$900, PC/IX is expected to be available beginning in April through IBM's National Accounts and National Marketing divisions. The National Accounts Division is located at 1133 Westchester Ave., White Plains, N.Y. 10604.

# Signs of Unix support seen coming from IBM

By John Gallant  
and Paul Gillin  
CW Staff

IBM's announcement of a Unix-based operating system for its Personal Computer was a powerful endorsement of the multiuser microcomputer and programmer workstation concepts. The debut of the Personal Computer Interactive Executive (PC/IX) also signaled IBM's corporate strategy to compete in a Unix world, according to analysts contacted last week by *Computerworld*.

IBM's introduction of PC/IX [CW, Jan. 16], along with the release of the PCjr and the XT/370 late last year, was another step in the industry giant's strategy to blanket the low-end computer market, according to Richard McMahon, president of Acton, Mass.-based AMT Computer Consultants, Inc. "This is also a good forerunner of a larger strategy," McMahon explained. "It could very well be part of an overall game plan to support Unix across the entire line."

"We're all waiting for the other shoe to drop," agreed David Fiedler, editor of "Unique," a newsletter for Unix users. "When IBM says it will support Unix through its entire product line, that will be the really important announcement."

In fact, one observer was puzzled by IBM's decision to release PC/IX before making its anticipated announcement of Unix on a 4300 series

superminicomputer. "I was hoping IBM would put its cards on the table and just announce its Unix policy," said Robert Marsh, president of Plexus Computer, Inc. and a director of USR/Group, a Unix users group.

Observers agreed that IBM's PC/IX announcement will bring order to an operating system that until now has lacked a strong vendor endorsement. "The move certainly legitimizes Unix," McMahon said. "It is now available for business applications, where before it was mostly geared to the scientific community. It means there will be wider acceptance of Unix, especially if it is also offered on mainframes and minicomputers in the future."

Fiedler said the PC/IX announcement gained additional importance because it came just before AT&T is expected to introduce its own Unix-based micro. "This will certainly take the wind out of any AT&T announcement," he said.

However, Marsh said the IBM announcement is more of a Big Blue effort to establish a market presence than to throw down the gauntlet in front of AT&T. "There are a whole slew of companies with versions of Unix ready to jump, and IBM is trying to establish position early before there's a lot of momentum in the other direction," he said.

McMahon said PC/IX makes the concept of a programmer workstation "quite a bit more viable."

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## NEWS

# Apple comes out with 32-bit microcomputer

By Jeffery Beeler  
CW West Coast Bureau

CUPERTINO, Calif. — Apple Computer, Inc. today radically restructured the high end of its personal computer line with the introduction of a transportable 32-bit micro that reportedly couples Lisa-like technology with a wide selection of personal productivity software packages.

Apple's long-awaited Macintosh machine serves as the entry-level member of a family of 32-bit personal computers that also include three replacements for the company's existing Lisa micro, introduced only about a year ago.

Announced alongside the Macintosh, one day before Apple's Jan. 24 annual security analysts meeting, the three Lisa newcomers include:

■ Lisa 2, which supports a micro-floppy diskette unit, but no hard disk capability.

■ Lisa 2/5, which comes with a 5M-byte external storage module.

■ Lisa 2/10, which boasts a built-in 10M-byte disk system.

Built around an 8 MHz Motorola, Inc. 68000 microprocessor, Macintosh is reportedly aimed primarily at computer-illiterate knowledge workers in business offices, schools, scientific settings and homes. Roughly 70% of the products, which Apple hopes to produce and sell in the millions, will find their way into the commercial world, a spokesman for

Apple predicted.

Although it will be distributed mainly through retailers, Macintosh will also be sold heavily through Apple's national account executives to Fortune 500 corporations.

## Peripherals and software

The debut of Apple's 32-bit micro line coincided with the introduction of a host of Macintosh-compatible peripherals and communications aids, including an external micro-floppy diskette system, numeric key pad and Apple Bus, a local networking facility.

Complementing the product family is a raft of previously unavailable software packages for applications such as business graphics, word processing, spreadsheet creation, micro-to-mainframe communications and project scheduling.

All three Lisa additions, as well as their Macintosh sister system, provide the same user interface, run the same software and use the same data interchange medium — an integrated 3½-in. floppy diskette, according to an Apple spokesman.

Apple credits the Lisa 2 machine with loading applications two to three times faster than the original Lisa, which the company has reportedly ceased manufacturing and selling. In addition, the trio costs thousands of dollars less than its year-old predecessor, which incorporated a

5¼-in. diskette unit.

Like all the Lisa models, Macintosh is configured with a mouse, uses icons extensively in its user interface, provides pull-down menus and displays multiple windows simultaneously. The entry-level personal computer also supports a "cut-and-paste" feature that allows data from one display window to be electronically transferred to another, the spokesman said.

## Single-tasking product

But unlike Lisa, which can process several applications concurrently, Macintosh is only a single-tasking product. So although it can move data among different windows of the same application, the micro is unable to cut and paste among different applications without forcing users to swap diskettes, the spokesman said.

Macintosh's user programs will come primarily from the more than 100 independent vendors with which Apple is now said to be engaged in software development. Heading the list of outside application suppliers are companies like Lotus Development Corp., Microsoft, Inc. and Software Publishing Corp., the spokesman said.

A few of Macintosh's application packages, however, will originate directly from Apple itself, which will supply programs like Mac Paint, an extensive graphics facility, and Mac Write, a word processing aid.

Apple will also provide a family of software packages that will allow Macintosh to communicate with central host processors. Apple Line, for example, will turn the personal computer into an IBM 3278 look-alike.

See APPLE page 10

## Customs sting nets 1,000 Apple II look-alikes

By John Gallant  
CW Staff

CUPERTINO, Calif. — U.S. Customs officials said they anticipate criminal indictments will be brought against three alleged importers of counterfeit Apple Computer, Inc. microcomputers, following what investigators termed a private sting operation that recently netted as many as 1,000 Apple II look-alikes.

Armed with search warrants obtained on the basis of information provided by Apple investigators, Customs officers in mid-December raided three California companies and seized between 370 and 420 counterfeit Apple II computers. The raids took place at Super Computer, Inc. in Santa Ana, Extra Computer Corp. in San Francisco and A-Tek, Inc. in Cupertino, according to Customs Special Agent Rollin Klink.

At the same time, Apple authorities obtained a temporary restraining order against Extra Computer, enjoining the firm from selling approximately 645 additional Apple II counterfeits, a spokeswoman said.

## Civil action

Jeffrey Blatt, a Beverly Hills, Calif., attorney who has represented Apple in copyright violation cases, said Apple then filed a civil action for a permanent injunction against Extra Computer. Blatt said Extra Computer subsequently agreed to a settlement whereby the firm paid Apple an unnamed sum and handed over components of the systems, including 645 motherboards and 1,400 erasable programmable read-only memories containing pirated Apple programs.

The raids, which were undertaken as part of Customs' Operation Tripwire, may result in the first U.S. criminal prosecution of counterfeit Apple computer importers. Joseph Russoniello, U.S. Attorney for the northern district of California, said his department has not yet decided whether to bring criminal charges against the firms involved. Those criminal charges could include smug-

gling, conspiracy, piracy and counterfeiting. He said similar charges are also under consideration by acting U.S. Attorney Alex Williams of California's central district.

Blatt said Apple will have to decide whether to file civil copyright infringement suits against the firms if federal authorities decide not to seek indictments. The attorney said Apple has filed some 35 copyright and patent infringement suits worldwide; and eight foreign cases have resulted in criminal prosecutions. Customs authorities estimated that more than 2,000 ersatz Apples were seized in the U.S. alone last year.

The December raids were the result of a private sting operation initiated by the Barrick Security Group, Inc., a San Mateo, Calif.-based investigation firm hired by Apple [CW, Sept. 26]. Barrick President Barry Bergman said the firm maintains data on "hundreds of individuals who deal in counterfeit goods." He said Barrick targeted importers who said they could provide "substantial numbers" of Apple II imitations. Using money provided by Customs officials, Bergman's investigators placed orders for the systems, which were then seized upon delivery.

Investigators would not divulge the manufacturers of the systems, but both Bergman and Klink said the computers, or their components, probably originated in Taiwan. Attorney Blatt said the Apple II computer has become a target for counterfeiters because it is easily built with off-the-shelf components and it enjoys broad software popularity. "We know the system is easily assembled in the Orient," Blatt explained. "Our estimates show that in the Far East phony Apples outsell the real thing by about 10 to one."

Customs officials estimated that each of the counterfeit systems was worth approximately \$400. The department, Klink said, is continuing its investigations in conjunction with the U.S. Attorney's office. Blatt said Apple expects a decision on criminal indictments within the month.

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## NEWS

# Apple seen betting the farm on Macintosh

By Robert Batt  
CW West Coast Bureau

CUPERTINO, Calif. — Apple Computer, Inc.'s new generation of 32-bit personal computers, spearheaded by the long-awaited Macintosh, is seen by company executives and industry pundits alike as the firm's most important product announcement since the Apple II.

Apple has reportedly spent millions of dollars on product development and is expected to pour an additional \$50 million into advertising the Macintosh in 1984 alone, prompting many observers to view the next two years as make or break time for the company's young, ambitious management team.

"This is clearly a bet-the-company product strategy, and if it doesn't work, by the time Apple regroups, it will have missed the whole next generation of personal computers and will be in serious trouble," asserted Mike Murphy, partner in a San Francisco-based investment analysis firm, Venture Capital Management, Inc.

For their part, Apple executives make no secret of the critical importance the new products have for the company's long-term viability.

## 'Current tech not sufficient'

Speaking at a press briefing prior to this week's launching of the Macintosh, a forthright Steve Jobs, chairman of Apple, declared:

"Our whole premise for the Macintosh is based on the fact that current technology is not sufficient to reach the tens of millions of people who need personal computers. If the people in this industry do not require radical technological innovation, then this company will not be here in two years' time."

However, few if any industry observers expect the Macintosh to be anything but an outstanding success.

"This is easily the best price/performance machine ever made. I think it will become the Apple II of the 1980s, and I see a very long life cycle for it, at least five years," said Ken Lim, personal computer industry analyst at the San Jose, Calif.-based market research firm, Dataquest, Inc.

Microsoft, Inc., one of more than 100 independent software vendors supporting the Macintosh, has committed a sizable portion of its new product development to the latest Apple line, and the company expects half of all its application program revenues in 1984 and 1985 to come from sales of Macintosh applications.

"To create a new standard takes something that's not just a little bit different. It takes something that's really new and captures people's imaginations. Macintosh meets that standard," commented Bill Gates, chief executive officer for Microsoft.

Apple's Jobs expressed the hope that what he called Macintosh's leap-frog technology will enable the computer to make huge inroads into small and medium-size businesses as well as the Fortune 500 corporations.

"Since IBM is going to be the service leader in the personal computer industry, we want to be the technology leader, producing low-cost personal computers. Our aim is to remove the need for massive service and support to the end user," he explained.

This is not to say that Apple's strategy for its new product line is without dangers. The most obvious potential pitfall is that the machines are not IBM-compatible. However, this does not seem to worry most industry analysts. A typical appraisal was offered by Greg Kelsey, investment analyst at the San Francisco firm, Hambrecht & Quist.

"There are good cost reasons for not making the Macintosh an IBM-compatible machine. In addition, with the Lisa models [Lisa 2, Lisa 2/5 and Lisa 2/10] having the capability to run both Macintosh software and IBM programs, there is a pretty good

argument for saying that Macintosh does not need to be IBM-compatible, given the market it is chasing," he said.

According to Lim of Dataquest, the absence of MS-DOS compatibility is a positive virtue. "It is far too early in the life of the personal computer industry to standardize on one particular operating system. In addition, MS-DOS machines are becoming a dime a dozen, so manufacturing another Personal Computer look-alike is just as dangerous a strategy as putting out a non-MS-DOS device," he said.

Another possible danger is that, as Venture Capital Management's Mur-

phy put it, "people just plain don't like the Macintosh" with its pull-down menus and a form factor that doesn't look like other computers.

Another potential pitfall, Murphy pointed out, is that in an attempt to save up to \$50 million a year on inventory costs, Apple is adopting the Japanese method of depending on two weeks of inventory. "Apple is working with suppliers who have never performed such 'just-in-time-delivery' service before. It's a new thing for the U.S. electronics industry, and if it backfires it could cost Apple a lot of money and lost orders," he proclaimed.

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NEWS

# Wafer woes plague Trilogy CPU delays expected

By Peter Bartollik  
CW Staff

CUPERTINO, Calif. — Trilogy, Ltd. said last week it had experienced problems with the manufacture of a prototype wafer-scale semiconductor device and as a result will experience a slight delay in the scheduled 1985 shipment of IBM-compatible, large-scale, high-performance computers.

Trilogy released a brief press release last Tuesday indicating that an added metal coating to the prototype wafer produced unsatisfactory results and that a revised procedure is expected to produce a completed wafer prior to the end of March.

Trilogy Vice-President Russell Drew told *Computerworld* the company has identified the problem and expects to complete the revised process "as early as February or as late as March." Drew said the original schedule had planned for completion at the end of this past December.

"It is not a monumental problem by any stretch of the imagination." The firm issued the announcement because it made a public stock offering in the last quarter of 1983 [CW, Sept. 12] and "wanted to alert everyone" about the delay, he said.

The company, founded in 1980 by Amdahl Corp. founder Gene Amdahl, had originally planned to ship its

first IBM-compatible supercomputers in the third quarter of 1985, but now believes those shipments will not occur until the fourth quarter of 1985. The new computers are predicted to attain a performance rate of 32 million instructions per second.

The new technology purportedly will see "40 wafers replace 4,000 integrated circuit chips" [CW, Aug. 8]. Sperry Corp. previously invested \$42 million to obtain a 15% interest in Trilogy [CW, June 13], and Digital Equipment Corp. invested \$26 million for a 9% interest [CW, Aug. 8], with both companies obtaining the rights to use the new technology in future products.

A DEC spokesman said the problem as explained by Trilogy is not unusual in early stages of production. "Delays in new product development are to be expected in this industry," he said. A Sperry spokesman said his company did not wish to comment on Trilogy's announcement.

Drew said the additional metal layer would have completed the wafer module. That module, he said, is said to include the actual wafer configuration, which packs the capacity of 100 integrated circuits onto a 2½-in. wafer and the actual packaging, which encloses the wafer and contains the cooling portion of the module.

## APPLE from page 8

while Mac Terminal will enable the machine to emulate teletypewriter-type terminals or Digital Equipment Corp. VT100s or VT52s, the spokesman said.

At Macintosh's heart is one printed-circuit board that contains all the product's digital electronics, including its 32-bit microprocessor, random-access memory (RAM), speech synthesis capability, 1M bit/sec serial port and mouse interface. The same 100-sq-in. board also houses the machine's Apple Bus hardware, which reportedly allows up to 16 Macintoshes, Lisas or other devices — including file servers and laser printers — to be interconnected in a local network.

With Apple Bus, each node in the 230.4K bit/sec network can be situated up to 1,000 ft away from any other hardware module, with a connection cost of \$25 per device, the spokesman said.

### Digital processing board

In addition to its other components, Macintosh's digital processing board incorporates 64K bytes of read-only memory, the vehicle for implementing all the personal computer's Lisa-like technology.

With its keyboard, 12-in. display screen and integrated 400K-byte microfloppy diskette unit, Macintosh weighs about 20 lb and occupies less than 110 sq in. of desk space, the spokesman said. The system also accommodates a second, optional microfloppy storage module that has to

be added externally.

Though currently limited to 128K bytes of RAM, Macintosh will be upgraded to 512K bytes before year's end, when Apple replaces the machine's existing 64K-bit memory chips with 256K-bit components, the spokesman said.

For users of its original Lisa, Apple will furnish an upgrade kit that will allow customers to migrate to any of the machine's three additional models.

An upgrade to the Lisa 2/10 will cost \$2,495, while a similar switch to the Lisa 2 or Lisa 2/5 will be free of charge, the source said.

Equipped with a minimum of 512K bytes of main memory and expandable to 1M byte, the Lisa 2, 2/5 and 2/10 cost \$3,495, \$4,495 and \$5,495, respectively. Macintosh, by contrast, retails for \$2,495.

Like Apple's existing Imagewriter laser printer, the 400K-byte add-on microfloppy storage unit sells for \$495, compared with \$129 for the numeric key pad. For the first 100 days after Macintosh's introduction, the Mac Paint and Mac Write software packages will be available at no charge. Thereafter, the programs will retail for \$195, the spokesman said.

All four members of Apple's 32-bit personal computer family — as well as most of their hardware and software accessories — are available for sale immediately. First customer shipments of the external 3½-in. microfloppy module will begin March 31 from Apple at 20525 Mariani Ave., Cupertino, Calif. 95014.

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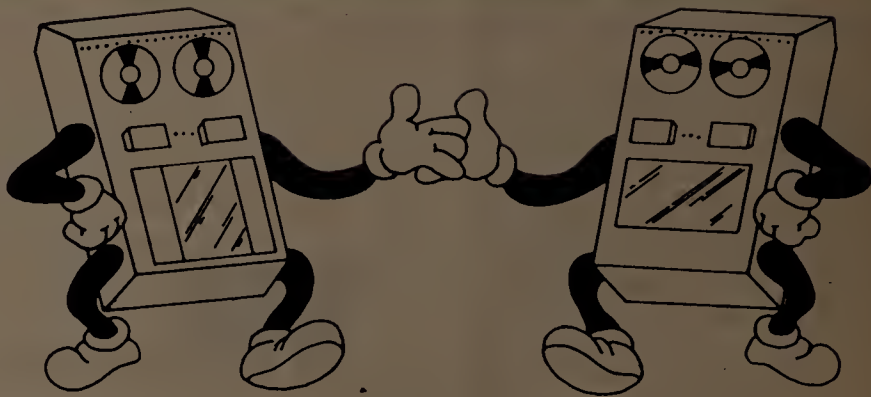
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## NEWS

# Raytheon enters OA arena with 16-bit system

By David Myers  
CW New York Bureau

NEW YORK — Raytheon Data Systems Co. made a late and limited entry into the crowded office automation arena here last week with a 16-bit Convergent Technologies, Inc. system aimed principally at the airline industry where the Norwood, Mass.-based division of the Raytheon Co. holds 85% of a \$100 million installed base.

Although Raytheon Data officials at a press gathering at the World Trade Center disputed the term "value-added OEM," they admitted the RDS Signature 8200 office system unveiled here was almost wholly made by Convergent — except for an airline communications link written by Raytheon engineers and " housings" manufactured by Raytheon Data.

The system, able to host up to eight terminals, runs the Convergent operating system software, rechristened RDSOS, for the Raytheon Data product offering.

Jane Ellis, product marketing manager for interactive and distributed data processing systems, said Raytheon Data decided to stick with the Convergent operating system because "it's been on the market for the last two years. It's field-tested and debugged. It won't go through the birthing pains a lot of new operating systems go through. We thought it was important to have a stable operating system."

At the same time, Raytheon Data officials disclosed plans to bring a Unix-driven office system to market later this year, perhaps as early as spring. Jon O. Hooper, senior vice-president for marketing and field operations, said the Convergent-driven system was brought out first in order to get a jump on competitors.

"There have been a lot of announced signings with Convergent, but this is the first system to be brought to market," Hooper claimed. It is also the first complete system to be marketed by the long-time maker of terminals.

"That's where the market is going," Ellis declared. "Customers have these terminals; they want to do something more with them. They look at all this gear and ask, 'How can I marry it all together?'"

A local-area network connection

to Xerox Corp.'s Ethernet will be available for the office system by April, according to Ellis.

The office computer, which can also run Digital Research, Inc.'s CP/M 86 and Microsoft, Inc.'s MS-DOS as "concurrent guest operating systems," is aimed at financial institutions and state and federal government agencies as well as airlines, Raytheon Data officials said.

Hooper said his company was not making a late break into office automation because "we already have the customer base in place." In addition to holding 85% of the airline-terminal market, Raytheon Data has installed

terminals at 60% of U.S. insurance carriers, Hooper claimed.

The RDS Signature 8200 introduced here last week can operate as a one-terminal computer or as a clustered system with a master terminal and up to seven slaves sharing hard and floppy disks, according to Ellis.

Programming languages available for the system include Cobol, Basic, Fortran, Pascal and assembler. Other program tools include a text file editor, a debugger, a linker/librarian for code segment management and a queue manager for controlling spooled and batch processes.

Available with 15-in. eight-color

or 12-in. one-color display monitors, the system is powered by an Intel Corp. IAPX 80186 microprocessor.

Raytheon Data said a typical word processing configuration, with one display terminal hooked up to dual floppy drives and a letter-quality printer, will cost \$9,050. A four-terminal data processing cluster, made up of one floppy drive, a 20M-byte hard disk, one letter-quality printer, one high-speed dot matrix printer and one 80-col. dot matrix printer, is listed at \$32,502.

Raytheon Data Systems is located at 1415 Boston-Providence Tnpk., Norwood, Mass. 02062.

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## Graphics meet set for Feb. 15

SAN FRANCISCO — Printing Industries of America, Inc. (PIA) will sponsor a conference here Feb. 15-17 on "Computer Graphic Networks 1984 to 1990."

The conference will be devoted to integrated systems and services that link graphics and visual media with computer and networking technologies.

Registration deadline for the conference is Jan. 27; fees are \$495 for PIA members and \$595 for nonmembers.

Information is available from Printing Industries of America, 1730 N. Lynn St., Arlington, Va. 22209.

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## NEWS

# Hybrid access channels hot topic

**CW AT ICA**

 By Phil Hirsch  
 CW Washington Bureau

FORT LAUDERDALE, Fla. — Integration of voice and data and enhancements to popular existing services were clearly on the minds of executives from three regional telephone holding companies who discussed their new offerings with managers of the nation's major corporate communications networks during the annual International Communications Association (ICA) conference here last week.

The speakers devoted much of their attention to discussing hybrid access channels capable of transmitting voice and data simultaneously or alternately over existing analog local loops; integrated access channels for those needing higher bit rates and greater capacity; and enhanced Centrex-CO facilities.

The regional holding companies

represented at the meeting were Bell South (comprised of Southern Bell Telephone and South Central Bell Telephone Co.), Nynex (formerly the New York and New England Telephone companies) and the Pacific Telesis Group (formerly Pacific and Nevada Bell Telephone companies). All three plan to offer Local-Area Data Transport (LADT) service and Circuit Switched Digital Channels (CSDC) by the end of this year.

## Using existing loop

The LADT and CSDC technologies utilize existing analog local loops. In the former case, the loop carries voice in analog form and data at speeds up to 4,800 bit/sec in digital form. In the latter case, the data is transmitted digitally at speeds up to 56K bit/sec alternately with analog voice.

All three regional holding companies, meanwhile, are expanding their fiber-optic circuitry and greatly increasing their ability to provide high

bit-rate services end to end. At the ICA seminar, Pacific Telesis Marketing Vice-President A. F. Boschulte indicated two ways his company plans to move present customers to these new offerings: those using private lines for low-speed data transmission are good prospects for LADT, he explained, while those using Dataphone Digital Service will be offered CSDC.

Last week's discussions at ICA made it clear that the divested Bell operating companies are relying on their in-place Centrex-CO equipment to give them an advantage over competitors who market directly to the end user; it also is clear that Centrex is being enhanced as quickly as possible to maximize the advantage.

Pacific Telesis, for example, plans to offer its Cenpac within the next few months.

Cenpac, according to Boschulte, will enable users of the IBM Personal Computer XT and compatible personal computers to order Centrex feature changes on-line.

# AT&T offers hints of coming ISDN

FORT LAUDERDALE, Fla. — Possibly the most significant comment at the International Communications Association (ICA) seminar on upcoming carrier offerings came from Dennis White, a services planning manager for AT&T Communications, the company's long-distance services provider.

Describing the integrated access channels that AT&T expects to begin offering shortly, White said they will consist basically of 24-channel, 1.5M bit/sec transmission facilities leased from regional telephone holding companies and resold to users as part of a long-haul circuit capable of transmitting voice, data, video and facsimile signals on an integrated basis.

What the company is planning to offer, in other words, is the first commercial, end-to-end integrated services digital network (ISDN) service.

The service will appeal to only a small group of users — those with a lot of traffic — but it nevertheless will become available, if AT&T's plans materialize, well before any ISDN was generally expected to enter the market and well before similar technology goes into regular service in other countries.

Subdividable 1.5M bit/sec channels capable of carrying voice/data/image signals have been available for some time. What distinguishes the new offering is its ability to reallocate this bandwidth on a dynamic, customer-specified basis.

The 24 subchannels each operate at 64K bit/sec and can be used, according to White, for individual voice and data services (Wats, Message Toll Service, packet-switched and/or circuit-switched data) according to instructions from the user. The instructions reside within the network in an on-line data base that the customer can access directly via one of the 24 channels. If the user's needs change unexpectedly, he can change the instructions immediately.

Integrated access channels will reportedly save the user money because they will enable him to buy bulk transmission facilities costing less per channel than the same facilities procured separately. The savings, White said, could be as high as 40%.

# Nets called vital marketing weapon

 By Phil Hirsch  
 CW Washington Bureau

FORT LAUDERDALE, Fla. — Telecommunications networks are becoming a valuable marketing weapon, consultant Howard Anderson said here last week.

By providing on-line access to specialized data bases, free or reduced-price terminals and similar assistance, Anderson told the International Communications Association (ICA) that banks, insurance companies and firms in several other industries are stealing a march on their competitors. One likely result is that the front office will pay more attention to the telecommunications

area — a possibility that could result in a bigger budget for the telecommunications department, he said.

Anderson expects 80% of all managers and high-level executives to be accessible through workstations by the 1990s. However, those devices will undergo major changes, with the personal computer emerging as the most popular type of workstation, he predicted at the ICA meeting.

Telephone carriers and computer companies will be the major suppliers of workstation equipment, according to Anderson. "Telephones soon will be computers, while computers are rapidly evolving into computer telephones."

Northern Telephone Co.'s Displayphone and similar devices are the forerunners of this new terminal, Anderson said. Besides transmitting and receiving voice and text messages, the Displayphone will have local computing ability, compatibility with the IBM 3270 and possibly other DP terminals, touch-sensitive file access, voice as well as text message storage/retrieval capability, an attached printer and other peripherals.

Anderson also predicted that the mainframe processing load will increase rather than diminish because the growing workstation population means more internal and external communications.

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# Court upholds Litton award

WASHINGTON, D.C. — The U.S. Supreme Court last week upheld a \$276 million award to Litton Systems, Inc. from AT&T, which had sought to overturn an antitrust damages suit won by Litton last February.

The court did not change the 2nd U.S. Circuit Court of Appeals ruling that AT&T excluded Litton from competing in the telephone terminal equipment market. Litton, based in Beverly Hills, Calif., claimed that it was impeded when AT&T dragged its feet during Federal Communications Commission proceedings.



## NEWS

# Senators propose access charge modification

By Phil Hirsch  
CW Washington Bureau

WASHINGTON, D.C. — Resolution of the bitter battle over pending telecommunications legislation became more likely last week when it was learned that a coalition of Republican senators, led by Robert Dole of Kansas, will oppose the legislation if the Federal Communications Commission modifies its pending plan to charge for access to the dial-up telephone network.

Terms of the proposed modification were stated in a letter sent by Dole to Mark Fowler, chairman of the FCC. Dole proposed in his letter that:

■ The surcharge that the FCC wants to impose on each residential and single-line business local loop — initially amounting to \$2/line per

month — be deferred for a year.

■ The surcharge be capped at \$4/line per month, at least through 1990.

■ Smaller independent telephone companies be free to continue collecting all long-distance network access fees from long-distance carriers (in other words, they would not have to be reimbursed partly for surcharges imposed directly on their local-exchange customers).

■ The differential between what other common carriers and AT&T Communications (formerly AT&T Long Lines) pay for local access under the FCC plan be adjusted in favor of the other common carriers.

#### Specialized carriers

Specialized carriers, who insist that the FCC's pro-

posed differential would increase their costs to prohibitive levels, have strongly opposed the FCC plan, along with consumer groups and key members of the U.S. Congress.

Business communications users, along with most telephone carriers, approve the FCC plan.

The House last year passed a bill (H.R. 4102) that permanently bars imposition of surcharges on residential and single-line business users.

The U.S. Senate's companion bill (S. 1660), which is now awaiting a final floor vote, defers these charges for two years.

#### Support at ICA

Support for the "Dole compromise" was indicated last week in Fort Lauderdale, Fla., at a meeting of the International Communications Association (ICA), a users group of communications managers who work for the nation's largest companies.

Bob Bennis, director of communications for Westinghouse Electric Corp. and chairman of ICA's telecommunications policy committee, said that although the ICA much prefers the access charge plan that is proposed by the FCC, the ICA membership is aware that this is an election year, and any scheme that increases costs for large numbers of voters is unlikely to be popular on Capitol Hill.

AT&T Vice-President Larry Garfinkel, one of the company's chief legislative policymakers, was also present at the ICA meeting. Garfinkel indicated a will-

ingness to modify AT&T's position, but it was unclear whether the modification would be enough to get AT&T behind the Dole compromise.

According to Garfinkel, AT&T continues to oppose any delay in implementation of the residential/single-line business access surcharge, but it is willing to accept a smaller initial charge and, possibly, a more gradual build-up to the full amount than it had previously indicated.

## Business users to gain from break up: AT&T

CW AT ICA

By Phil Hirsch  
CW Washington Bureau

FORT LAUDERDALE, Fla. — Deregulation of

AT&T's long-distance services will benefit business users as well as the company, AT&T Vice-President Larry Garfinkel said here last week.

Garfinkel asked communications managers from the nation's largest companies to help AT&T sell this idea in Washington, D.C., when he spoke before the International Communications Association (ICA).

Cost-based rates for busi-

ness users will be one benefit of deregulation, said Garfinkel, who is the new chief services planner for AT&T Communications.

Garfinkel pointed out that under present tariffs, which are based on the separations-settlements process, companies that use interstate long-distance circuits pay more for these services than it costs the carrier to provide them.

The Federal Communications Commission's controversial access charge plan, now scheduled to go into effect next April, is intended to correct this alleged imbalance, Garfinkel indicated, and AT&T is working hard to

get the access charge implemented.

However, he suggested that additional rate reductions would be forthcoming from deregulation — discounts for volume purchases of long-distance transmission facilities would be one example. Such discounts are commonplace in competitive industries, Garfinkel said.

#### More innovative services

More innovative services also would result from deregulation, Garfinkel argued. AT&T would no longer be required to announce its plans in advance to the FCC and, thus, to its competitors, and charges could be based on incremental costs that are much lower than the fully distributed costs now required.

Garfinkel pointed to several services AT&T has proposed in the last several months — audiographic teleconferencing, international videoconferencing, optional calling and new time-of-day pricing plans — that had to be abandoned or drastically changed because of FCC objections.

The FCC is now looking at whether and to what extent deregulation of AT&T Communications is necessary, Garfinkel said. He expects this proceeding to encourage significant relaxation of present restraints, probably on a service-by-service basis, in two to three years.

The FCC proceeding is known officially as Docket 83-1147.

Interested parties have been asked to submit their initial comments to the commission by Feb. 1; reply com-

ments are due March 19.

During a question-and-answer session following his presentation, Garfinkel was asked whether AT&T's existing service to remote areas would suffer if its long-distance offerings were deregulated.

Garfinkel responded by asserting that the company is willing to guarantee "ubiquitous service" at rates pegged to the consumer price index or a similar inflation indicator.

Asked to comment on a major argument against deregulating AT&T Communications — that it presently has at least a 90% market share — Garfinkel responded that AT&T's share is 75% in the "competitive markets" which, he said, are confined to interurban communication among residential customers spending \$25 or more per month and business customers spending \$50 or more per month on interstate services. Other common carriers have the remainder.

#### Corporate customers

Garfinkel stressed that a large percentage of AT&T's revenue comes from a small number of corporate customers.

For example, 79% of the company's earnings from interstate business services are contributed by 2% of the customers; only about one half of 1% of those customers contribute nearly 20% of the company's business toll telephone revenue.

His underlying point was that because of this concentration, a deregulated AT&T would not neglect its corporate customers.

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## NEWS

# Job-matching firms ride boom

By John Gallant  
CW Staff

Touted by developers as the wave of the future in job hunting, most computer-based employment matching services are reaping the benefits of an improving U.S. economy through increased usage and an influx of investment capital.

"The upswing in the economy has had an incredibly positive impact," said Joseph Stacey, president of Bedford, Mass.-based Jobnet, Inc., in a recent interview. "Prospective customers are coming to us with pent-up demand. Now they're looking to hire sooner rather than later. We've seen a phenomenal growth in new customers and in interest in the service."

Jobnet provides employers with a data base of resumes submitted by job-hunting applicants. Among its present customers, Stacey estimated, usage of the data base has increased by several hundred percent.

"The [economic] situation is clearly improving, and our information says that trend will continue for the next couple of years at least," he added. "Our service will also continue to expand because we provide a steady flow of qualified applicants."

Stacey was not alone in his optimism. Base Network Corp. President Fred Robertson, whose firm offers the Contacts computerized recruitment service, said the outlook for the industry is excellent. "Our system usage is easily twice what it was three months ago. Things are really moving. It's like day and night compared to two years ago. We offer employers a chance to contain their hiring costs and reduce their employee search time, and both of those factors are very important today."

The brightening economy has given Chicago-based Contacts an additional boost. Robertson's firm recently concluded a million-dollar funding

deal that will provide the capital necessary to expand Contacts' base of operations. "Due to the changing economy," Robertson said, "this has become a more viable option for venture capitalists."

Though it has yet to offer its services to the public, Careersystem, Inc. has also reaped the financial benefits resulting from the mending economy. The Palm Beach, Fla., firm is poised to enter the market for on-line employment services following a three-year data base development and test marketing project and a public stock offering that raised needed investment funds. "The solid response we had from our public offering showed that the interest in our type of service is out there," said President William Berry.

But the industry has had its casualties, too. One of the most promising of the on-line employment services — the Cambridge, Mass.-based Connexions Interactive Recruiting agency — recently suspended operations after less than a year on the market.

According to former President Robert Kvaal, the problem was a "matter of access to capital. The institutional investors just didn't materialize." Kvaal declined to expand further on the difficulties Connexions encountered, but hinted that the firm may resume operations in the future.

Connexions represented the sole sour note in a chorus of optimism sung by industry experts. "We have seen a marked increase in the amount of activity on our system," said Michael O'Connell, co-founder of Computer Search International, Inc.'s Employ on-line data base, which is offered through The Source information service. "The economy has opened up a lot more jobs. People were holding tight to their positions before; they were reluctant to move. But now they're really starting to get up and go."

# Programmers top wanted list in '84

PHILADELPHIA — Programmers will be the employees most in demand during 1984, a year in which six out of 10 new jobs will be computer-related in some parts of the U.S., according to a survey by Fox-Morris Personnel Consultants, Inc.

The 10th annual survey of Fox-Morris recruitment and search offices throughout the nation showed that demand for programmers will increase by 18.7% over 1983 levels.

The company also predicted that corporate data processing and management information systems directors can expect median salaries of \$65,400 or top salaries of \$71,500, placing them eighth from the top in a list of projected salaries for management-level personnel.

On the list of high-demand job titles, electrical and electronics engineers are projected to see 18.5% more openings in their field than in 1983, software/systems engineers 15.1% more, systems analysts 13.8% more and MIS directors 8.9% more.

Fox-Morris President Sanford L. Fox said the proliferation of both business and personal computers will continue to stimulate the demand for data processing professionals at all levels. He said that six of 10 new jobs in the Midwest will be computer-related.

Among workers with two to six years of experience, median and top average salaries are expected to be \$33,380 and \$39,500 for electrical and electronics engineers; \$31,570 and \$33,800 for systems analysts; and \$29,150 and \$31,800 for programmers.

At the entry level, computer science graduates can expect median average salaries of \$23,500 and top average earnings of \$24,550, the company said. The report is available free from Fox-Morris, 1500 Chestnut St., Philadelphia, Pa. 19102.

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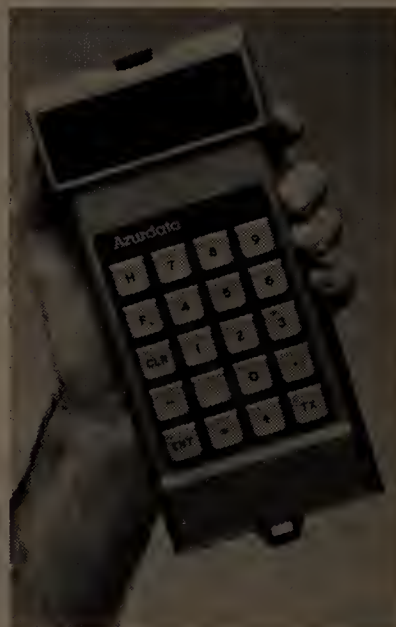
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## NEWS

# Survey asks: What makes a good DPer?

By James Connolly  
CW Staff

PALM BEACH, Fla. — When data processing managers hire data processors, they want the candidates with the greatest work experience, technical know-how and educational background.

But once on board, the "good data processor" should rely more on personality — logic, receptiveness and communication skills — than on technical ability to advance in a corporation.

Those were some of the conclusions of the "Professional EDP Hiring Study" conducted in November for Robert Half International, Inc., a recruiting firm specializing in data processing and financial personnel, by Burke Marketing Research of Cincinnati. The telephone survey, whose results were released to *Computerworld* last week, polled 50 DP managers and 50 top executives of Fortune 1,000 firms about their DP

hiring practices, career growth for DP personnel and the relationship of DP personnel to the rest of their companies.

In listing the traits they look for when hiring experienced personnel, DP managers cited experience 62% of the time. Technical knowledge was mentioned 58% of the time, education 32%, personality 22% and job stability 20%.

Sixty-eight percent of the DP managers said they were responsible for hiring entry-level employees and 74% for experienced workers.

When asked what attributes a "good data processor" exhibits, the DP managers and corporate vice-presidents in 52% of the survey calls cited "personal attributes" such as logic (23%), interaction (15%) and communication (8%). In 46% of the calls, they cited "skills" such as technical expertise (16%), problem solving (10%) and training on equipment (9%).

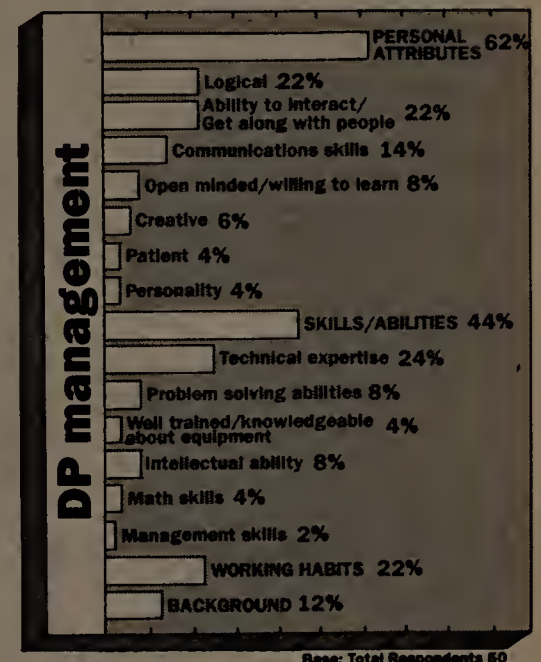
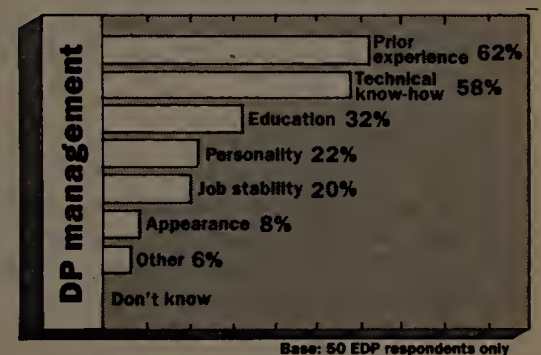
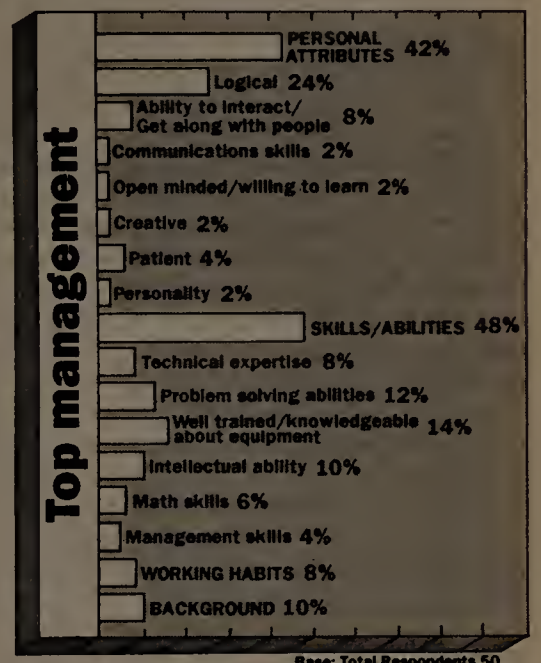
Ninety-six percent of the 100 managers said DP personnel must communicate well to "get ahead," while "lack of motivation" was cited as the main reason for nonadvancement. Seventy-one percent of those polled said that data processors are "too DP-language-oriented."

## 'Scared of technology'

Robert Half, president of the recruiting firm, which is headquartered here, said in an interview last week that corporate leaders still tend to be "scared as hell of technology" and that they may be more impressed by a data processor's technical skills. "DP managers, on the other hand, assume the person has the skills. If the employee has had four years of Cobol, he should know Cobol. That may be why they are looking more at personal traits," Half said.

The survey also showed that 52% of the DP managers expect data pro-

See HIRING page 16



## DP managers, VPs part ways on question

PALM BEACH, Fla. — Data processing managers and company vice-presidents don't always agree when they're asked what makes a "good data processor."

The 50 Fortune 1,000 vice-presidents polled in a recent survey conducted for Robert Half International, Inc. here tended to define a "good data processor" according to skills,

while data processing managers favored personal attributes such as logic and communications.

### Lack of motivation

More data processing managers (40%) than top managers (18%) cited lack of motivation as the reason data processors fail to get ahead in companies, while top managers leaned to-

ward personality deficiencies (30%) as the reason for failure to get ahead in companies.

Top managers felt strongly (48%) that data processing is an excellent field in which women can advance; this belief is held strongly by only 28% of the data processing managers polled.

The top managers also felt strongly (76%) that they and their peers should have a "working knowledge" of data processing procedures. Only 60% of the data processing managers agreed with that suggestion.

Meanwhile, the data processing managers (72%) disagreed more strongly than the top executives (54%) with the suggestion that data processors lack imagination.

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## NEWS

**HIRING** from page 15

cessing personnel to show more loyalty to their companies in the coming year and that the same percentage see DP departments as traditionally having higher turnover rates than other departments.

Half observed, "Computer people are more conscious of their profession — the hardware and software. Financial people are more conscious of the company. For the DP person to advance, he has to change that outlook, because the company, not the profession, writes the check. Somewhere along the line you have to say, 'This is where I am. I like it here. I'm going to stay.'"

The poll also showed that DP personnel usually are hired through help-wanted ads and recruiters. However, most managers said they

have responded, not necessarily in the positive, to unsolicited letters.

Other findings included the following:

■ Seventy-five percent of the DP managers polled oppose the licensing of data processors.

■ Fifty-eight percent said computer science graduates should have more business or practical experience.

■ Only 7% said it is "likely" or "very likely" a head of data processing will become its company's chief executive officer within 10 years.

Those surveyed also were asked what advice they would give to a person entering data processing.

They responded with "communicate" (26%), "learn as much as you can" (16%), "business background" (14%) and "learn technical skills" (12%).

**'Allow me to introduce my mother'**

PALM BEACH, Fla. — Asked for the most unusual approaches that job applicants pulled out of their sleeves, some of the DP managers recently surveyed for recruiting firm Robert Half International, Inc. cited the predictable "inflated experience or resume."

But other managers, impressed for better or worse, had seen more original attempts to obtain interviews.

They included applicants using a sympathy approach — with crutches and wheelchairs, walking in unan-

nounced and claiming a job, calling the managers at home, claiming to be programmers on the basis of having used a computer and saying they were writing a book on data processing.

One applicant told the interviewer she had won a contest for a free lunch, while another claimed to be more interested in the corporation's welfare than in his own.

Finally, a manager cited the old reliable ploy: An applicant brought his mother on an interview.

**DG chief sees revenue growth of 20% to 25%**

By Peter Bartollik  
CW Staff

BOSTON — Data General Corp. should experience revenue growth of 20% to 25% annually over the next two years, but shortages of components, particularly semiconductors, could affect shipments and costs during 1984, company President Edson de Castro told shareholders at DG's annual meeting here last Tuesday.

Expressing optimism for continued growth in orders as reported for the past two quarters ending in September and December, de Castro said the firm's management team is concerned "about our ability to increase shipments as rapidly as orders come in [during] the months ahead.... Shortages of components, especially some types of semiconductors, are beginning to appear. If such shortages become significant, they may affect shipments or costs or both."

De Castro told shareholders that the board of directors intends to elect as a company vice-president Hisashi Tomino, president of DG's Japanese subsidiary, Nippon Data General Corp. He also announced the appointment of a board of scientific advisers comprised of professors from MIT, Stanford University, Carnegie-Mellon University's Robotics Institute



CW photo by P. Bartollik

**Edson de Castro**

and the University of California at Berkeley, including two specializing in robotics and artificial intelligence.

The company did not experience any problems during the quarter ended in December, but "it is a risk that may continue for much of 1984." Expanding later, he said problems are developing industrywide in the supply of random-access and read-only memories, gate arrays and also some components used in mass storage.

While sales and profits increased in the past two quarters, ending a three-year slump that saw annual profits dip from a high of \$54.6 million in 1980 to \$23.1 million last year, the profit margin for the first quarter ended in September was only 6.2% because of start-up costs for the Desktop Generation microcomputers and added expenses. By the end of 1984, that margin may increase to the low or mid-teens, de Castro said.

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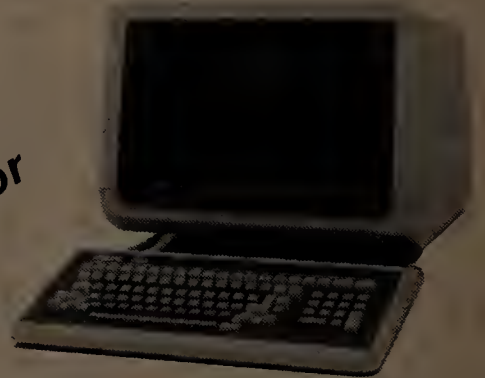
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## NEWS

# Comp-U-Card plys high-tech merchandising

**compUstore**

 By John Gallant  
 CW Staff

STAMFORD, Conn. — With more than 60,000 items in its data base of brand-name consumer products, Comp-U-Card International, Inc. (CUC) here is bringing the techniques of merchandising into the computer age.

Touted by founder Walter A. Forbes as the leading national electronic merchandising service, CUC offers its more than one million subscribers the opportunity to obtain price and product information from the data base by telephone or through their own home computers. The firm is also carrying the technology a step further by installing in various retail outlets interactive videodisk terminals that enable cus-

tomers to browse through the customized data base and place orders directly into the system.

CUC carries no inventory; instead, customer orders input into the system are transmitted to the selected vendor's warehouse or outlet to be shipped directly to the customer.

Forbes began building the network of retailers, distributors, wholesalers and manufacturers that offer products through the CUC data base in 1974. The service was originally offered only to telephone subscribers who called a toll-free 800 number to obtain price and product information. In 1979, CUC began Databucks, which Senior Vice-President E. Kirk Shelton said was the first interactive home computer shopping service.

Databucks, which was later to be expanded into the

Comp-U-Store service, was initially offered through The Source network. Comp-U-Store is currently available through The Source, Dow Jones and the Compuserve information services and directly to members with a modem-equipped microcomputer.

CUC continues to expand the Comp-U-Store service into what Shelton described as an "electronic mall" by adding an extensive line of pharmaceutical and health care products and specialty items such as the Nieman-Marcus line of gourmet foods.

Until the Databucks service was instituted in 1979, all CUC's product information was maintained through an extensive manual system. The company then installed a Digital Equipment Corp. Decsystem-2060 mainframe with 2G bytes of memory and be-

gan the arduous task of building the 60,000-item data base and writing the proprietary operating system and data base management system software that drive the system.

"The initial phase of the project was to design a computer system that would parallel the manual system," Shelton explained. "The process of writing the code took more than two years. It had to be developed one piece at a time, and through each step we would maintain the manual system until we were certain the electronic system was up and running satisfactorily."

"The development process involved a ton of work, but the hardest thing was getting the right suppliers for the system."

CUC currently has a staff of some 30 programmers who maintain the software and

data base, a task that Shelton said involves close to 100,000 monthly updates to keep product and price information timely. Aside from the users who access the data base through their own micros, CUC has a staff of some 100 people who operate a bank of microcomputer nodes which remotely access the mainframe from the company's headquarters here. The terminal operators man the telephones for CUC's still rapidly growing Comp-U-Card phone-in retail service.

The CUC system is equipped with a "least cost optimization" feature that chooses the best price among the vendors offering the same product through the system. Thus, vendors have to be price competitive in order to be selected, a situation that often leads to savings of up to 40% for CUC customers, Shelton said.

## Comp-U-Mall marks next step in electronic shopping

STAMFORD, Conn. — Comp-U-Card International, Inc.'s (CUC) revenues increased nearly 140% in fiscal 1982 to reach \$4.2 million. In the first three quarters of the firm's latest fiscal year, that figure has already grown to more than \$5.5 million.

The bulk of CUC's revenues come from the \$25 annual membership fee levied on subscribers. In addition, the company earns a percent-

age of each sale transacted through the network. The Comp-U-Card telephone retail service continues to account for a large portion of CUC's sales, and management expects that sales through Comp-U-Card will double every year for the next three years as a result of the firm's "aggressive direct marketing" techniques.

With Comp-U-Card, subscribers check on price and

product information using a toll-free telephone number — (800) 843-7777. Utilizing the system's least-cost optimization feature, a CUC terminal operator provides a customer with the lowest cost listed among vendors for a particular item. The customer can then place an order, which CUC automatically transmits to the vendor's shipping center for fulfillment.

Comp-U-Card does not allow users to browse the data base; they must have a par-

ticular product in mind. But that limitation is overcome through Comp-U-Store, another CUC service, which allows customers with microcomputers to access the CUC data base through either an information service or their own modems. After the user enters some broad product characteristics, the system continues to prompt him to obtain more data. The user then receives on his micro a list of products that meet his criteria.

Along with the products,

the CUC system chooses the best price among the vendors offering the products. The customer then enters his order directly into the system.

CUC Senior Vice-President E. Kirk Shelton expects use of the Comp-U-Store service to triple each year for the next three years. Comp-U-Store is currently being expanded into the Comp-U-Mall, a concept that will allow microcomputer users to shop from a variety of "stores" housed in an electronic mall.

In addition to the current offerings of 60,000 brand-name products, Comp-U-Mall will offer a discount drug store line, flowers and specialty items from selected catalogs such as Nieman-Marcus. Subscribers will shop in the electronic mall in the same manner as in the Comp-U-Store.

CUC is also making an extensive effort to market its recently announced Video Comp-U-Store. Unlike its other services, the Video Comp-U-Store is a point-of-sale service that makes use of a videodisk terminal to enable customers to browse the CUC offerings or a data base custom-designed for a particular vendor. At kiosks in selected retail stores, customers can call up product information and enter orders, which are transmitted directly to a delivery center.

Video Comp-U-Store is currently being tested in seven department store locations owned by Woodward & Lothrop, Inc. in Washington, D.C., Filene's in Boston and Dillard Department Stores, Inc. in Dallas.

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## NEWS

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## AUSTRALIA

SYDNEY — Apple Computer Australia Pty. Ltd. has appealed Justice Beaumont's rejection of its suit charging Computer Edge Pty. Ltd. with breaching Apple's copyright on Applesoft and Autostart ROM. The appeal against Computer Edge and its managing director, Michael Suss, will be heard again by a full bench next month.

## DENMARK

COPENHAGEN — NCR Corp. is continuing its quest to dominate the DP market in Scandinavia. Plans call for the vendor to open an Advanced Technology Center in Oslo, Norway, devoted to seminars and workshops in the application of state-of-the-art technology, Chief Executive Officer Bent Larsen said. Further, terms are being finalized for a joint venture with a leading Norwegian vendor, the Elektrisk Bureau, that sources here said will result in a Scandinavian organization larger than IBM.

## FINLAND

HELSINKI — Finland's largest

computer maker, Nokia, became Scandinavia's second biggest computer company by purchasing 70% of the holdings of the Swedish firm, Luxor. The acquisition was valued at around \$20 million. Luxor, the Swedish state-owned electronics company, created the ABC Series of micros, which tops the list of best-selling microcomputers in Sweden.

## FRANCE

PARIS — Olivetti and its French subsidiary, Logabax, are expected to introduce a microcomputer compatible with the IBM Personal Computer. The look-alike, jointly developed by Docutel/Olivetti and Logabax in Cupertino, Calif., is said to be a remake of the 1600 system from Eagle Com-

puter, Inc. In France, the product reportedly will be called the LX 1600, handle two 360K-byte diskettes and feature a 10M-byte disk and be available by the summer in order to compete with the IBM Personal Computer and Personal Computer XT, sources said. The entry-level version is expected to cost \$2,800.

Meanwhile, Olivetti will unveil the LX 1600 under its own label this quarter. It has been rumored that AT&T has already ordered 120,000 units of this product for its Italian subsidiary.

## JAPAN

TOKYO — Japan's Information Industry Committee of the Industrial Structure Council called for legislation to protect software here and to help the growth of the indigenous software industry.

TOKYO — Fujitsu Ltd. has reached a six-year joint development agreement with Texas Instruments, Inc. The agreement allows TI to use Fujitsu's four types of bipolar transistor-to-transistor logic gate array technology and Cmos gate array technology in a variety of large-scale integration circuits.

TOKYO — Mitsubishi Electric Corp. has introduced a 16-bit small business system. Carrying a \$12,723 price tag, Mitsubishi's Melsom 80 Model 8 is a low-end machine that runs under the Digital Research, Inc. MP/M 86 operating system and features data/job control, Japanese word processing and graphics.

## NORWAY

OSLO — For the second time in its 20-year history, Norway's prestigious Industry Achievement Award went to a computer company when Norsk Data claimed the prize here on Jan. 9. Gisele Rutman, president of the institute that bestows the award, said Norsk was selected for its "stamina and staying power in exporting its product line to markets that are otherwise dominated by the Americans."

OSLO — John Sterns, president of Sterns Europe, met with his future European distributors here on Jan. 14 to discuss support for Sterns' various product lines. Sterns has reportedly introduced a personal computer that is based on Microsoft, Inc.'s MS-DOS operating system. It has a full-page screen option and is said to operate twice as fast as the IBM Personal Computer.

## WEST GERMANY

FRANKFURT — Sales of the IBM Personal Computer here have not lived up to the vendor's expectations. Since the product's introduction one year ago, just 7,000 have been installed in the Federal Republic of West Germany, sources said. IBM reportedly plans to remedy this situation by restructuring its product sales and marketing arm here — an announcement that allegedly triggered the resignation of IBM's Frankfurt-based sales and marketing manager, Romin Neumeister, on Jan. 1.

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## NEWS

# Nicaraguan DP managers face special ills



By Barbara Schaffer  
Special to CW

MANAGUA, Nicaragua — "Computerization is not a credential for acquiring privileges, it's a social duty."

So reads a slogan on a classroom wall here at the Central Bank of Nicaragua's employee training center. Next to it hangs a Fidel Castro quote: "Sacrifices are fleeting. The only thing that stays with us is the satisfaction of having served the people."

In war-torn Nicaragua, many special problems plague DP directors. Government pressure to fight for the country's Marxist regime, an upside-down economy and a general lack of state-of-the-art technology combine to make Nicaragua one of the world's least desirable places for computer professionals.

An area of major concern for Central Bank's DP Director Eric Brenes is the lack of political commitment among DP people — thus the Marxist signs and slogans. Brenes claimed that "programmers tend to relate more to their computers than to how their work benefits the larger society ... they tend to program without knowing or caring what the purpose of their work is."

Participation in the volunteer militias is unusually low among computer people, a fact that has not escaped notice in government circles, Brenes said. On the other hand, most computer professionals are not prodded into leaving their jobs to become active in Nicaragua's war efforts because their work is of such economic importance. For example, one of Brenes' computer operators was not allowed to volunteer for a coffee-picking brigade because there was no one to replace him at work.

#### Tough to keep trained staff

Nevertheless, Brenes maintained that holding onto computer operators, programmers and analysts in Nicaragua is one of his biggest problems. The Bank coordinates the activities of the country's seven nationalized banks and financial institutions. These banks would like very much to be able to double or triple their respective staffs (they currently employ about 250 computer professionals), but the country is suffering from an acute shortage of trained computer personnel, Brenes said.

Salaries in the state DP sector are not very attractive, Brenes admitted. Analysts pull in about 8,500 Cordobas a month (\$850 at the official rate of exchange, but closer to \$85 at the black market rate because American dollars are scarce). While DPs can make more money in Nicaragua's private sector, many experienced analysts and programmers leave the country for more lucrative jobs elsewhere, Brenes noted.

The ongoing shortage of qualified computer people has forced some of the banks to raid other banks' DP departments, tempting the more experienced staffers away with promises of more interesting assignments and slightly higher pay, Brenes said. Most of the banks' programmers are recent college or technical school graduates in their early twenties.

Brenes himself is only 29.

Another obstacle Brenes must contend with — shared by both state and private enterprise here — is the lack of foreign reserves and credit needed for buying new equipment. (IBM is presently the only computer vendor operating in Nicaragua.) Brenes reported that the banks are now in the process of replacing their IBM System/34 minicomputers with IBM System/36 machines.

Brenes is also planning to have micros installed in all bank branches to record daily transactions. There are no plans for linking the micros to a central processor, however, because

the telephone lines are not adequate to handle the job, he lamented.

Despite his inability to tie the smaller machines together, Brenes thinks microcomputer technology is particularly well-suited for Nicaragua because "it is less vulnerable to economic and political pressure than mainframe technology, especially in terms of maintenance."

Schaffer is a bilingual journalist and technical writer based in Berkeley, Calif., who recently visited Nicaragua. She acted as interpreter during training sessions on structured Cobol at the Central Bank of Nicaragua.



Photo by B. Schaffer

Brenes

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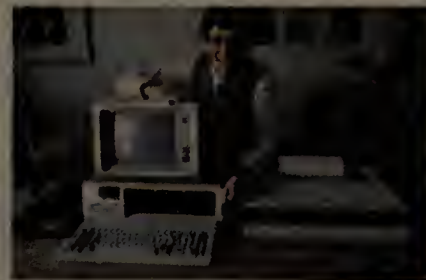
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## NEWS

## Sinclair micro makes UK debut

By Rex Malik  
Special to CW

LONDON — Americans will be able to mail-order a \$499, 3-lb, 32-bit system with an 8-bit communications bus from Sinclair Research Ltd.'s U.S. factory this fall, Sir Clive Sinclair, chairman, said at a press conference here to introduce the

machine to the UK market.

Slated for delivery to UK users late next month, the Quantum Leap (QL) machine features 128K bytes of random-access memory (RAM) (expandable to 640K bytes) and twin microdrives with 100K bytes each.

The system's communications bus is based on Motor-

ola, Inc.'s 68008 microprocessor, which Sinclair said will soon become an industry standard.

The microcomputer runs on Sinclair's proprietary Qdos operating system and an enhanced version of the company's Basic software called Superbasic. Qdos is said to allow single users to perform concurrent multitasking.

#### London demonstration

At the London press conference, demonstrations of the machine showed a split CRT screen running six parts of a program each in different windows.

Sinclair claimed the system could handle concurrent processing up to 20 programs.

The 3-lb system also comes with a full-size keyboard and four basic software packages: a word processor, a spreadsheet, a data base management system with relational properties and screen editor and a graphics package.

According to the vendor, the QL can be compared to Apple Computer, Inc.'s Apple IIe, priced five times higher, and IBM's Personal Computer, priced seven times higher.

If Sinclair delivers, sources here believe the QL will redefine the microcomputer industry's price/performance parameters, making it very difficult for anyone else to compete in the short term.

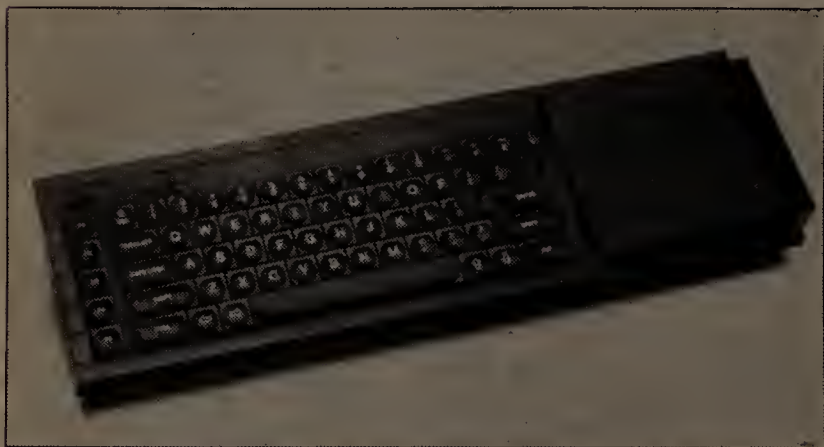
#### Sinclair gamble

On the other hand, Sinclair is taking a huge gamble: The QL is aimed at the home/professional/educational/business marketplace, while Sinclair had formerly confined its strategies to the low end of this arena.

Moreover, the QL is not compatible with previous Sinclair products, even though the vendor said the local-area network facility will allow Sinclair Spectrums and QLs to be configured on the same network.

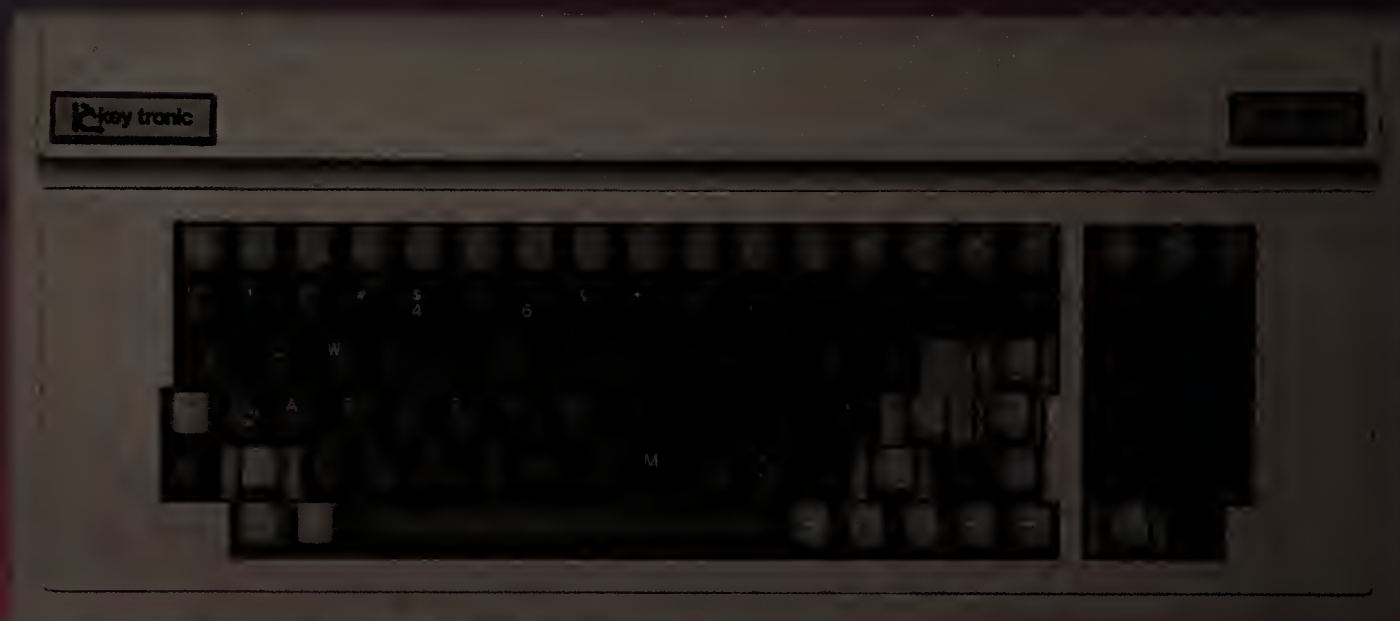
Therefore, many industry watchers feel that the QL must be introduced with all the essentials already existing or shortly on the way in order for this product to fly. In keeping with this, Sinclair announced that the following QL peripherals and enhancements are now under development: a 512K-byte memory board extension, a Pascal compiler, a 68000 assembler, a terminal emulator, an analog digital interface, a Winchester disk interface, a modem, a parallel printer interface with multichannel sound generator and a 488 interface.

Malik is a freelance computer journalist based in London.



Sinclair's Quantum Leap

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## NEWS

## TURNAROUND TIME

LARRY E. LONG

**Q** For seven years I've been with a consulting firm where each promotion is an up-or-out decision. My last two promotions have been on time, and my supervisors have indicated that I'm doing what is necessary to be considered eventually for partnership.

A few recent events have caused me to rethink my career. Two very competent colleagues were denied partnership. This came as a surprise to everybody.

In addition, I've been offered an MIS management position with a client company that offers excellent advancement opportunities.

Given the inconsistency of evaluation criteria at my present firm, would you suggest that I resign and take the position at the client company?

**A** You're confronted with resolving the age-old question of risk vs. security.

If you enjoy consulting and aspire to partnership and feel comfortable with your progress toward that goal, pursue it.

If you feel ambiguous performance evaluation criteria preclude you from shaping your career destiny with good performance, perhaps you should leave the firm.

**Q** You came out against the use of logic aptitude tests as a means of determining a person's ability to become a programmer. I disagree.

Based on my experience, I agree that, as you stated, "people who fail the tests may make excellent programmers," but the other statement that "high scorers may never be able to program" is misleading. I have never known a trainee who scored high on an aptitude test who could not perform well in programmer training.

In fact, I feel confident to predict that a candidate who scores well on an aptitude test and has a strong interest in the work will invariably perform satisfactorily as a production/maintenance programmer.

We went through intervals of using or not using aptitude tests, along with normal interviewing and examination of prior work or schooling. The change in the failure rate was well correlated with the use of the aptitude test.

So, a standard programming aptitude test should be used to screen out the unsuitable applicants.

**A** During the 1960s and, to some extent, the 1970s, DP staffs were created from scratch with available people, most of whom knew little or nothing about computers. With virtually nothing to go on but past performance in an unrelated field, managers turned to aptitude tests as a means of determining an employee's potential to do programming.

This was fine for that era, but today the overwhelming majority of the people being employed in computer-related jobs have some work experience or education in the field. I contend that the proper evaluation of

background information is a more effective predictor of success than an aptitude test.

I liken use of aptitude tests for screening to the use of grade point averages in the screening of students for on-campus interviews. Grade point averages do not reflect personality traits, ambition and enthusiasm. Likewise, neither do aptitude tests.

**Q** I recently received a degree in computer programming from a community college. Now I am attempting to find employment, but am finding three common responses: We are not hiring right now; send us your resume; and we don't hire entry-level people.

The third point, in particular, frustrates me and, I believe, many

other would-be programmers. How can you get experience if you can't get a job?

How does a would-be programmer find that first job if he must have X number of years' paid experience to work there?

**A** During the past year, I've received more mail on the issue of the hiring of entry-level people than on any other issue. The mail from MIS managers has been both pro and con, but as you might expect, the mail from professors and students has stressed the quality of the product and the economics of hiring recent graduates.

This may be of little solace to your immediate need, but the feedback I received from recent discussions with about 100 MIS managers is that

they are beginning to view the hiring of entry-level people more favorably. Perhaps their change in attitude is a reflection of the change in the economy. Or it may be that MIS managers can't find experienced personnel or they are recognizing the potential contribution of graduates of good programs.

For whatever reason, I look for employers to return to college campuses in the spring with authorizations to fill plenty of entry-level positions.

*Long is a professor at Lehigh University, a DP consultant and author. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.*

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## NEWS

## ACM seeks papers

NEW YORK — The Association for Computing Machinery (ACM) is calling for papers for its 1984 Annual Conference which will explore the advanced integrated systems and new techniques of the 1990s. The theme of the conference, which will be held Oct. 8-10 at the San Francisco Hilton,

is "The Fifth-Generation Challenge."

All papers and proposals for panels must be received by Feb. 15. Notifications of acceptance will be sent to authors by April 30.

Proposals should be sent to Program Chairman, ACM '84, Suite 303, 9900 Main St., Fairfax, Va. 22031.

## Managers save data from fire

By James Connolly  
CW Staff

HIGHLANDS, Texas — Officials of a local petroleum plant recently dashed across fire lines and into their smoked-filled offices to save computer disk packs and paper records seconds before the office burst into flames.

Sue Franta, data process-

ing manager for Hi-Port Industries, Inc., led the charge when she, two other managers and her husband rescued a dozen 10M-byte disks and armloads of books while a Dec. 5 fire was leveling much of the sprawling petroleum products firm.

"We watched from across the street for about 40 min-

utes and didn't think the office was going to burn. When we saw the firemen couldn't contain it, we just ran into the building.

"There were no lights, but I knew where the packs were. We started grabbing them and handing them to people," Franta said. "Then the back door burst into flame. It didn't take minutes, just a second or two."

"All I remember after that is hauling it out the door. We were bumping into each other and everything. It must have looked like a Three Stooges movie."

The rescuers saved packs of the company's Data General Corp. CS-40, and, within days, were running their payroll, accounting and other programs on another company's computer in Houston, 25 miles away.

Most Hi-Port records were duplicated off premises, but the data for the two weeks prior to the fire and the data on paper could have been lost in the \$20 million blaze. "We did lose some data, but nothing that we can't recoup through our backup," Franta said.

The fire struck at a time when the company was planning to upgrade its system and to develop a disaster plan.

"Let this be a lesson to everyone," Franta said.

Franta said she expected to be without an in-house system for several months as the company rebuilds. The firm resumed production days after the fire.

The blaze, of undetermined origin, was fueled by the oils, antifreeze and cleaning solvents that Hi-Port blends and packages. It leveled the building housing the computer.

"My brother is a volunteer firefighter and saved me a piece of the computer. It just crumbled in my hand," Franta said.

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## Sage Faire Set for Reno

RENO, Nev. — Sage Faire '84, a conference on the future of supermicro computer technology sponsored by Sage Computer Technology, will be held Feb. 3-5 at the MGM Grand Hotel in Reno.

The cost of attending Sage Faire '84 is \$10, if registration is done by form, or \$15 by registering at the fair, the vendor said.

Additional information is available from Marion Kenefick, Burson-Marsteller, Suite 100, 2041 Mission College Blvd., Santa Clara, Calif. 95051.



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with the smallest 4300 series system up through the powerful 3084 model.

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## NEWS

MANAGERS  
ON THE MOVE

Angelica Uniform Group of St. Louis has named **KENNETH S. AULL** manager of management information training for the MIS department. Aull will evaluate existing equipment and computer operating system programs for the manufacturer of uniforms in light of current and future processing requirements. He will also plan, guide and coordinate immediate and long-range conversion plans.

Aull holds a bachelor's degree in economics from Iona College in New

Rochelle, New York and has over 14 years' experience in his field.

Carter Hawley Hale Stores, Inc. in Los Angeles, has announced that **R. VINCENT CONANT** has been named president and chief executive officer of the Information Services Division; **WILLIAM F. JONES** has been named senior vice-president of development; **ROBERT M. MENAR** has been named senior vice-president of computing and communications; and **JOEL E. MONTGOMERY** has been named vice-president of human resources for information services.

Carter Hawley Hale operates 125 stores through its department store divisions. The company also operates 37 high-fashion specialty stores through Bergdorf Goodman, Holt Renfrew and Neiman-Marcus.

**JOHN ABERNATHY** has been appointed director of information and



Abernathy

data processing services for Pen-Well Publishing Company's Advanced Technology Group in Littleton, Mass. Abernathy previously spent eight years with Hewlett-Packard and was responsible for technical support of the business computers at the Andover, Mass., manufacturing division and most recently for programming support of the inventory system at the Chelmsford distribution center.

He has also been systems manager for Travelers Insurance and programmer/analyst with DuPont

Chemical.

Abernathy is a graduate of Gettysburg College with a bachelor's degree in mathematics. He received a master's degree in computer science from Rensselaer Polytechnic Institute.

**RICHARD E. KRIEG** has been named vice-president of computer systems development for Associates Bancorp, Inc., a subsidiary of The Associates Corp. Krieg is responsible for the management of application development, office information systems and data resource management.

Krieg joins The Associates with 20 years of experience in financial and systems experience, working most recently for Lincoln National Corp. as vice-president of data processing development.

Previous positions were with Consumer Systems Services Group and MSA, Inc.

**JOHN W. MERRELL** has been appointed an assistant vice-president in the electronic installations department of Metropolitan Life Insurance Co. in New York. Merrell is head of the software and operating systems services unit, which provides the systems software that runs at Metropolitan's several computer centers.

Merrell joined Metropolitan in 1973 as a planning consultant in electronic installations. He became a planning manager three years later, and in 1980, he was appointed a manager. Before joining Metropolitan, he held several positions with the Royal Insurance Co. in New York.

He received his B.A. degree in economics from Richmond College in 1972.

**TERRY LEE SOCALL** has been appointed as director of information services of Visual Services, Inc. in Bloomfield Hills, Mich. Formerly the manager of systems and programming at Detroit Metal Extruding Co., Socall is responsible for computer operations, systems and programming at VSI's corporate headquarters.

Socall earned his associate's degree at the University of Florida, Gainesville and his bachelor's in business management at Wayne State University in Detroit.

Visual Services, Inc. offers integrated merchandising services, such as contests, sweepstakes and coupons; industrial communications, direct marketing, motivation and incentive programs; and telemarketing packages, including rebates.

**NBD Bancorp, Inc.** has appointed **JAMES E. BARLETT** as senior vice-president of the Information and Operation Services Division of National Bank of Detroit, the corporation's principal subsidiary. NBD Bancorp is the parent company of 17 banks, as well as trust, mortgage finance, insurance and venture capital subsidiaries.

Barlett is responsible for the general direction of the operations area, such as computer services and trust operations, which provides support for the products and services offered by NBD Bancorp subsidiaries. He remains senior vice-president.

Barlett joined the bank in 1979 after serving as a consultant/partner with Touche Ross and Co. He was named senior vice-president in 1981.

He holds a B.S. degree in industrial management and an MBA from the University of Akron.

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**3270/ASCII OPTIONS** 8-10

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**MEMO** 8-10

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## NEWS

# Videotex eyed as traffic stopper

By Paul Korzenlowski  
CW Staff

HONOLULU — Instead of building a highway or a public rail system to alleviate traffic congestion, city and state officials here are considering a videotex system.

Honolulu traffic is so congested that \$20 million was spent by the Hawaii Department of Transportation to study possible solutions to the problem. City officials are considering rationing automobile travel and implementing road pricing, which would charge people for using certain roads, to alleviate congestion.

But "there is a limit to what rerouting and traffic control accomplish," said Carl Takamura, an aide to Hawaii's governor, George Ariyoshi. "What Honolulu needs is a revolutionary method to ease congestion."

One method, proposed by Aegis Systems Corp. in Tigard, Ore., is the purchase of a personal computer for every Honolulu home, business and office, along with the development of Autoride, an on-line transportation application. "Autoride will be a 24-hour, on-line system matching riders and drivers, arranging special transportation for elderly or handicapped people and possessing security features," explained Malcolm McLeod, a Department of Transportation economist.

The system so sparked the interest of Gov. Ariyoshi that he has scheduled a governor's conference for Jan. 31-Feb. 1 so opponents and proponents of the system can debate its merits. "There is at least a 50% chance that the system will be implemented," McLeod said.

Aegis estimated that \$200 million would be required to implement the system. "It requires 320,000 personal computers, one or two mainframes and communications equipment," noted Robert Benke, president of Aegis.

But the price is less than that of comparable rail and bus system solutions. "Autoride's implementation cost is less than 20% of the cost for building a highway or transit system," Benke said. The cost of proposed public rail transportation system for Honolulu is estimated at \$1 billion.

Autoride would match riders to taxis or private automobiles traveling to nearby areas.

"The system will use a more intelligent card than a magnetic-strip reader," Benke claimed. "The card would have a microprocessor. When a person enters a password, it will be written on the card rather than on a central data file."

In the proposed system, riders enter pickup points, destinations and times when rides are needed. Drivers enter routes, destinations, times of departures and vehicle registrations. Drivers may be either professional taxi drivers or residents.

A mainframe would check

driver registration to ensure that the driver has no criminal record and that the car is insured, then match riders to drivers. "The key is providing door-to-door service," Benke said.

Drivers and riders will not exchange money. "The system would be cashless,"

Benke noted. "At the end of the month, riders would be billed and drivers would be paid."

Drivers will either be paid cash or receive credit slips for gasoline. Credit slips will be used if Honolulu implements gasoline rationing as a means of curbing congestion.

Number of Automobiles on Oahu	
1970	325,000
1980	474,000
1990	694,000 (Projected)

Number of Residents on Oahu	
1970	630,528
1980	760,957
1990	847,000 (Projected)

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CW 1/23



## NEWS

## HP's IUG meet to address varied DP topics on Feb. 26

ANAHEIM, Calif. — A wide range of topics — data communications to application design — will be featured at the Hewlett-Packard Co. International Users Group (IUG) annual conference Feb. 26 to March 2 here at the Disneyland Hotel.

Hosting the event for IUG, a non-profit association of HP computer us-

ers, will be the Southern Regional Users Group, a 700-member affiliate of the IUG. Delegates from HP will present lectures on HP software, support and future strategy. Software contributions will be distributed in the form of a swap tape.

More than 120 exhibits of HP 3000-related products will be featured at a vendor show.

About 1,800 participants are expected. The conference registration fee is \$400.

Conference Manager, HP 3000 IUG, 2570 W. El Camino, Mountain View, Calif. 94040.

## Pick Spectrum set for Reno Feb. 22-24

RENO, Nev. — Pick Spectrum '84, sponsored by the International Data Base Management Association (IDBMA), will be held Feb. 22-24 at the MGM Grand Hotel here and will focus on computer education for the business professional. The conference is geared toward the Pick & Associates, Inc. Pick operating system.

Highlights of the computer conference include a series of sessions for business professionals, beginning with what a computer is and ending with an understanding of a total computer solution.

Among the 14 education sessions are ones concerning the difference between hardware, software and firmware; the definition of application software; word processing; computer communications; videotex; peripherals; and how to shop for a total computer solution.

Fifty exhibitors are contributing to the education sessions.

The full conference registration cost is \$300. One-day registration costs \$100, and the cost of attending the exhibits is \$15, according to IDBMA.

IDBMA, Suite 210, 9470 Appaloosa Road, San Diego, Calif. 92131.

## SIM extends paper deadline

WASHINGTON, D.C. — The Society for Information Management (SIM) has extended until Feb. 15 the deadline for paper submissions to its 1984 Society Awards Competition.

Papers must describe an MIS, an approach to developing information systems or a technique for improving or managing an MIS activity. They should also deal with completed systems, be less than 1,000 words and include a short description of the system.

The first-place winner will receive \$5,000, and the paper will be printed in *MIS Quarterly*, published by the University of Minnesota. Awards of \$3,000 will be made to runners-up; all finalists' papers will be reviewed for publication in *MIS Quarterly*.

E. Nancy Markle, Vice-President of Information Services, Federal National Mortgage Association, 3900 Wisconsin Ave. N.W., Washington, D.C. 20016.

## HP users groups to merge

MOUNTAIN VIEW, Calif. — By a nine-to-one margin, the 5,000-member Hewlett-Packard Co. HP 1000 International Users Group and the 2,000-member Hewlett-Packard HP 3000 International Users Group voted to consolidate their boards of directors.

Approximately 3,200 members voted before the Dec. 14 deadline. The officer staffs and many of the administrative functions for the two users groups have been merged for 2½ years.

"With the support of the members, the users group can now swing the doors open to users of other HP models, such as the HP 150," according to

Bill Crow, association manager for both groups.

### More effective unified

"HP computer users benefit from a unified users group. The more comprehensive we are, the more effective we are as an influential voice to HP and a resource for members," Crow said.

Membership in either group is priced at \$400 for an institution, which includes a set of public-domain software, or \$50 for an individual.

International Users Group, Inc., 2570 El Camino Real W., Mountain View, Calif. 94040.

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## NEWS

# Ergonomics seen key to better productivity

By Lynn Haber  
CW Staff

Office automation and the new information technologies are today's lifelines to business productivity, profit and survival. But it's not enough just to put a personal computer or a terminal on a desk.

Mechanical engineering must go hand-in-hand with human engineering — ergonomics — if the automated office is to be effective, office designers and consultants told *Computerworld* recently.

From a public health and safety perspective, as many as 12 states are considering legislating ergonomic re-

quirements for all work places that use modern technological devices such as CRT terminals.

According to Carl Ross, a spokesman for Herman Miller, Inc., a New York-based manufacturer of office furniture and leader in the development of ergonomic furniture, there are studies that strongly suggest "with improved ergonomic workstations, there is increased worker productivity."

And Jeffery Simon, partner and senior vice-president in charge of technical services for SCR Design Organization, Inc., also of New York, noted that a major thrust at the re-

cent International Facilities Managers Association conference in Denver was that companies are becoming much more aware of people and recognizing that people are their greatest resource. "When you look at the amount of money you spend yearly on facilities and equipment, etc., it still revolves around the person and quite often the person's salary," Simon noted. "Companies realize that absenteeism and productivity are going to make or break a business. They are tuning in on the worker — and ergonomics is one way of doing this."

"The central problem confronting all organizations is that existing fa-

cilities are built to mature standards — many 30 years old or more — that effectively support a mature, paper-based work process," according to a report, titled "Office Automation and the Work Place Standards in the '80s," written by Jon B. Ryburg, senior associate for the Facility Management Institute, a division of Herman Miller Research Corp. in Ann Arbor, Mich. "Everything in today's corporate environment, including furniture, lighting, windows, space standards and building utility systems, is geared to whatever technology and/or activities are ultimate

See OA page 30

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## Ohio VDT bill called typical of state efforts

Legislation that attempts to regulate the use of video display terminals in the office environment is being prepared in many states across the country. Typical of this type of legislation, according to Janice Blood, a Boston spokeswoman for 9 to 5, an organization for working women, is Ohio's House bill 552, authored by Rep. Barbara Pringle.

The stated purpose of the bill is to require minimum occupational health and safety standards for operation of VDTs in places of employment. The bill specifies certain equipment requirements: that the terminals be placed on adjustable chairs and tables; that they be equipped with tilt screens or be placed on movable platforms and have detachable keyboards; that they be equipped with individual brightness and contrast controls; and that they come with noise reduction covers, have metal shielding on the transformer of the VDT to block radiation and be in an area where there is indirect lighting.

There is also a provision mandating rest breaks for workers and setting maximum exposure limits, a provision that employers give free eye exams at least once a year and a pregnancy consideration clause requiring employers to offer alternative duties at the same work site to pregnant VDT operators. The bill also

See BILL page 30

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## NEWS

**OA** from page 29

ly required to do paper-work."

The report noted that "the new technology of office automation is based on a new way of working. Slowly at first, but gradually, it involves more and more the use of computer support via terminals (and other devices) until the work activity has changed dramatically and the facility environmental

support requirements are different."

Some of the factors for the basic automated office which should be considered for a safe and productive ergonomic environment include floor space, lighting, electrical service, room temperature, noise level, floor coverings and furniture requirements, such as desks, chairs and file cabinets.

Simon, an architect with SCR, a company which for its

5½ years in the business has specialized in corporate office interiors, observed that "quite often what we've seen in touring numerous office facilities is that people will have the CRTs on file cabinets next to them, with their knees pressed up against the side of the cabinet to get close and their backs arching away from the back of the seat. It shows that with the advent of automation in the office, the furniture which is

generally existing or even if it is new, may not be properly designed for use with that equipment."

**Broader approach**

While the technology industry flourishes with more varied equipment offered by a greater number of vendors, standards for the industry remain in a state of flux. And according to Ryburg's report, "if mis-matches are to be corrected, a broader approach to

new facility standards to support office automation is required."

A solution to the need for a new facility standard to support office automation in the 1980s must, the report stated, "include both comfort and productivity, or it will not be effective. And to be effective, the performance requirements for facilities must include the integration of people, process and place factors, not just one or two."

From a design perspective, one of the things Simon sees being stressed in interiors is flexibility, "so that the furniture you buy, the space you build, you're not painting yourself into a corner. You want the space and the furniture to be able to change to meet the needs of the equipment which may be coming in a year or that's not even known right now."

"There's so much talk about ergonomics going on today that most of the corporations know or have a sense of the importance of the situation," Simon said. "When we do an analysis of a setting, we bring the company up to speed if we see that they're really thinking in the dark ages — and we're going through this with a number of our clients."

**Construction cost**

In terms of cost, according to Simon, a fairly automated office should be planning \$35 to \$40 per square foot for construction costs, with some of that cost, potentially as much as \$15 to \$20, supplemented by the landlord.

In terms of furniture, filling in pieces including chairs and files, another \$10 is often budgeted.

"I think that by giving people a good environment, one that is going to make their day, since people spend a large portion of their day at their place of work, you're in essence giving them a nice environment that makes their work easier, their attitudes better and their image for the company and respect for the company enhanced," Simon concluded.

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**BILL** from page 29

calls for semiannual inspections of the equipment and open documentation, making available the inspection records for review by VDT operators and/or their representatives.

The bill asks for penalties to be imposed on an employer for violations of the provisions amounting to \$1,000 per day of violation.





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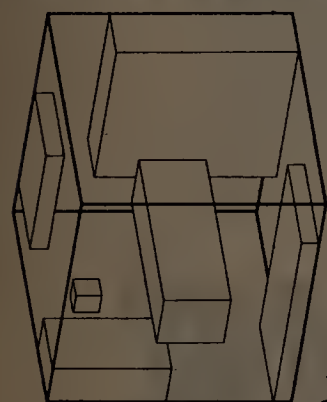
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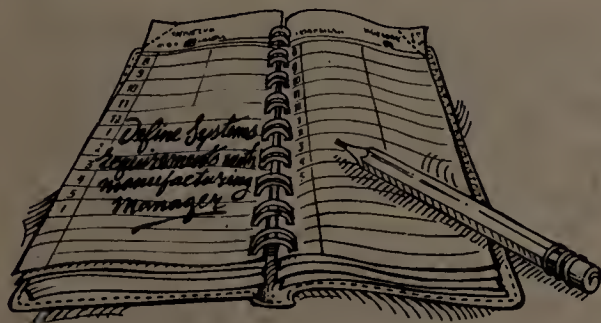
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## NEWS

## CALENDAR

## WEEK OF FEB. 5

**FEBRUARY 7-10, SEATTLE — Structured Systems Design.** Contact: Georganna Carson, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

**FEBRUARY 7-10, BOSTON — Data Communications.** Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, P.O. Box 45404, Los Angeles, Calif. 90045.

**FEBRUARY 7-10, SAN DIEGO — CAD/CAM Systems.** Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, P.O. Box 45404, Los Angeles, Calif. 90045.

**FEBRUARY 7-10, WASHINGTON, D.C. — Microprocessor Software, Hardware and Interfacing.** Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, P.O. Box 45404, Los Angeles, Calif. 90045.

**FEBRUARY 7-10, WASHINGTON, D.C. — Programming in C: A Hands-On Workshop.** Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, P.O. Box 45404, Los Angeles, Calif. 90045.

**FEBRUARY 7-10, SAN DIEGO — Software Project Management.** Contact: Integrated Computer Systems, 3304 Pico Blvd., Santa Monica, Calif. 90405.

**FEBRUARY 8, WALTHAM, MASS. — DP/User Interface.** Contact: Chris Riopel, Conifer Computer Services, 370 Main St., Worcester, Mass. 01608.

**FEBRUARY 8-9, CARY, N.C. — SAS Color Graphics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

**FEBRUARY 8-10, BOSTON — Advanced Office Automation for the 1980s.** Contact: Software Institute of America, 339 Salem St., Wakefield, Mass. 01880.

**FEBRUARY 8-10, NEW YORK — SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

**FEBRUARY 8-10, AUSTIN, TEXAS — Performance Engineering of Software Systems.** Contact: Information Research Associates, 911 W. 29th St., Austin, Texas 78705.

**FEBRUARY 8-10, SAN FRANCISCO — Local-Area Networks.** Contact: Systems Technology Forum, Inc., 9000 Fern Park Drive, Burke, Va. 22015. Also being held Feb. 29-March 2 in Washington, D.C.

**FEBRUARY 9, NEW YORK — PC-DOS 2.0.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

**FEBRUARY 9, NEW YORK — Personal Computer Communications.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

**FEBRUARY 9-10, BOSTON — Troubleshooting the Data Communications Networks.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940. Also being held Feb. 16-17 in Seattle and Feb. 23-24 in Pittsburgh.

## WEEK OF FEB. 12

**FEBRUARY 12-14, DEERFIELD BEACH, FLA. — Outlook for Computer Printers.** Contact: Institute for Graphic Communication, 375 Commonwealth Ave., Boston, Mass. 02115.

**FEBRUARY 12-15, BALTIMORE — Prime Users Group East, 1984 Conference.** Contact: Ray Grande, Prime Users Group, P.O. Box 138, South Attleboro, Mass. 02703.

**FEBRUARY 13-14, BOSTON — Operating Systems for Personal Computers.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940. Also being held Feb. 23-24 in Chicago and Feb. 27-28 in Los Angeles.

**FEBRUARY 13-14, BOSTON — Supporting and Maintaining the Data Communications Networks.** Contact: Data-Tech Institute, 386 Franklin Ave., P.O. Box 569, Nutley, N.J. 07110.

**FEBRUARY 13-15, WASHINGTON, D.C. — Personal Computers in Business and Government.** Contact: National Institute for Management Research, Department PR, P.O. Box 3727, Santa Monica, Calif. 90403.

**FEBRUARY 13-15, CHICAGO — Microcomputer Data Base Management Systems.** Contact: Software Institute of America, 339 Salem St., Wakefield, Mass. 01880. Also being held Feb. 27-29 in Atlanta.

**FEBRUARY 13-15, NASHUA, N.H. — Structured Testing.** Contact: New Hampshire College Re-

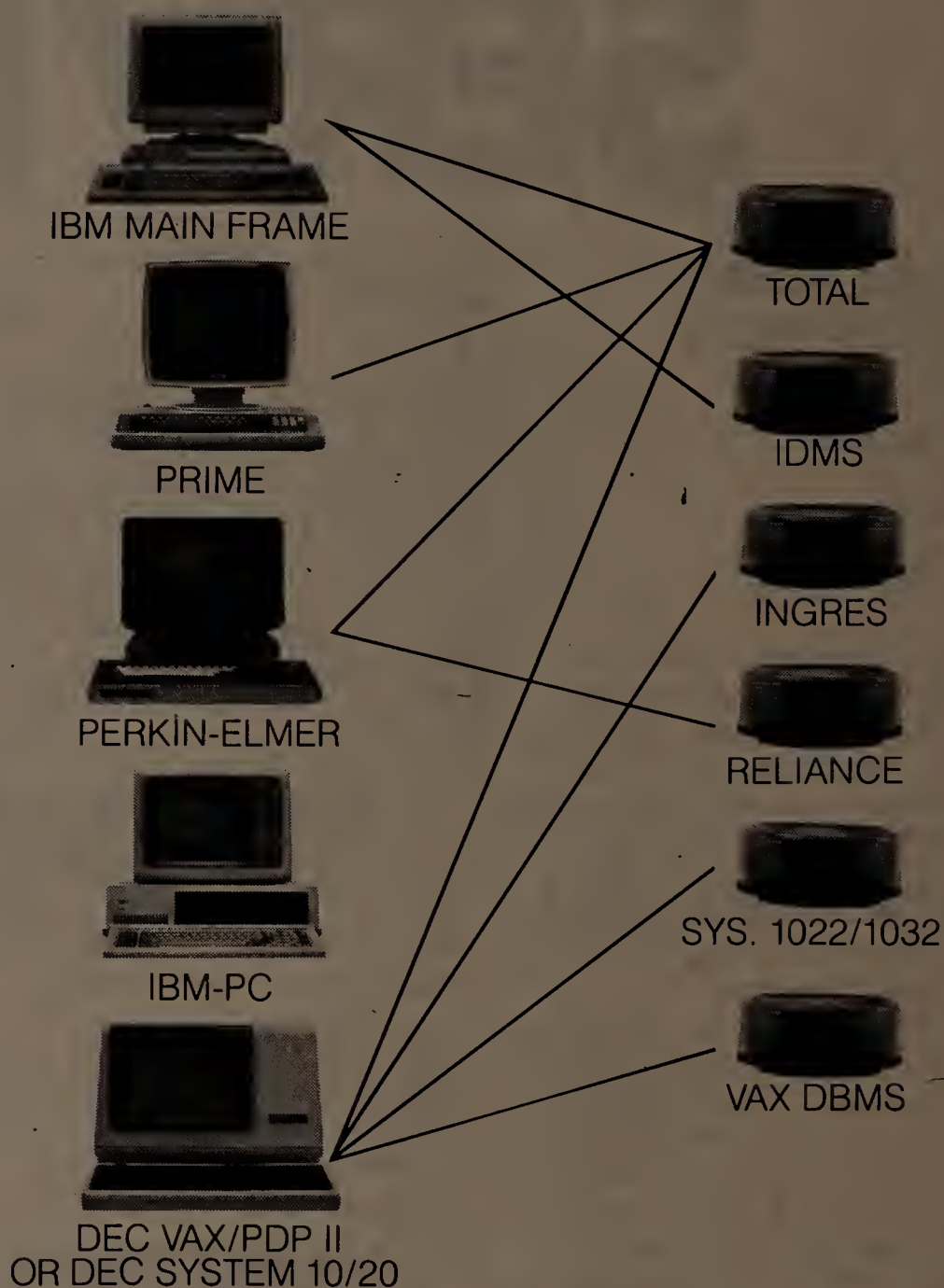
source Center, New Hampshire College, 2500 N. River Road, Manchester, N.H. 03104.

**FEBRUARY 13-15, BOSTON — Purchasing Management and the Computer.** Contact: American Management Associations, P.O. Box 319, Saranac Lake, N.Y. 12983.

**FEBRUARY 13-15, SARASOTA, FLA. — Office Automation.** Contact: Management Information Systems, National Easter Seals Society, 2023 W. Ogden Ave., Chicago, Ill. 60612.

**FEBRUARY 13-15, SAN FRANCISCO — Structured Design.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

**FEBRUARY 13-15, PORTLAND, MAINE — Systems Project Management.** Contact: Association for Systems Management, 24587 Bagley



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## NEWS

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**FEBRUARY 13-15, LOS ANGELES — Auditing and Security Concepts for IBM's MVS Operating System.** Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

**FEBRUARY 13-15, LOS ANGELES — Facilities for Auditing Within IBM's OS/VS Operating Systems.** Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

**FEBRUARY 13-15, LOS ANGELES — Audit and Control of CICS.** Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

**FEBRUARY 13-15, PARSIPPANY, N.J. — MVS Dump Debugging.** Contact: Chubb Institute, 8 Sylvan Way, P.O. Box 342, Parsippany, N.J. 07054.

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**FEBRUARY 13-16, WASHINGTON, D.C. — CICS/VS Application Design.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

**FEBRUARY 13-16, FORT LEE, N.J. — CICS/VS Logic and Debugging.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Feb. 13-16 in Washington, D.C.

**FEBRUARY 13-16, LOS ANGELES — Vtam: From Start to Finish.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

**FEBRUARY 13-16, PHILADELPHIA — C Programming Workshop.**

Contact: Plum Hall, 1 Spruce Ave., Cardiff, N.J. 08232.

**FEBRUARY 13-17, ORLANDO, FLA. — Vsam Programming.** Contact: Harris Education Center, 6220 S. Orange Blossom Trail, Orlando, Fla. 32809.

**FEBRUARY 13-17, DETROIT — Structured Analysis and Design Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**FEBRUARY 13-17, WASHINGTON, D.C. — Work Load Analysis and Forecasting.** Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

**FEBRUARY 13-17, TRUMBULL, CONN. — C Programming.** Contact: Gregory Geiger, Bunker Ramo Information Systems, Trumbull Industrial

Park, 35 Nutmeg Drive, Trumbull, Conn. 06609.

**FEBRUARY 13-17, BOSTON — Structured Analysis and Systems Specification Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held Feb. 13-17 in Cleveland, Long Beach, Calif., and Melville, N.Y.

**FEBRUARY 13-17, NEW YORK — CICS/VS Application Programming.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

**FEBRUARY 13-17, OAKBROOK, CALIF. — Effective Data Base Design.** Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

**FEBRUARY 13-17, DENVER — Structured Analysis for Real-Time Systems.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held Feb. 13-17 in Palo Alto, Calif.

**FEBRUARY 13-17, HOUSTON — CICS/VS Internals.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

**FEBRUARY 13-17, MINNEAPOLIS — Structured Analysis and Design.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

**FEBRUARY 13-17, ATLANTA — The Data Structured Systems Development Methodology.** Contact: Georganna Carson, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

**FEBRUARY 13-17, CHICAGO — Information Modeling Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held Feb. 13-17 in Philadelphia.

**FEBRUARY 13-17, CHICAGO — Project Planning and Control Workshop.** Contact: J. Baldwin, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

**FEBRUARY 14, NEW YORK — Introduction to Lotus 1-2-3.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

**FEBRUARY 14, NEW YORK — CICS/VS Concepts and Facilities.** Contact: Teltech, 39 Broadway, New York, N.Y. 10006.

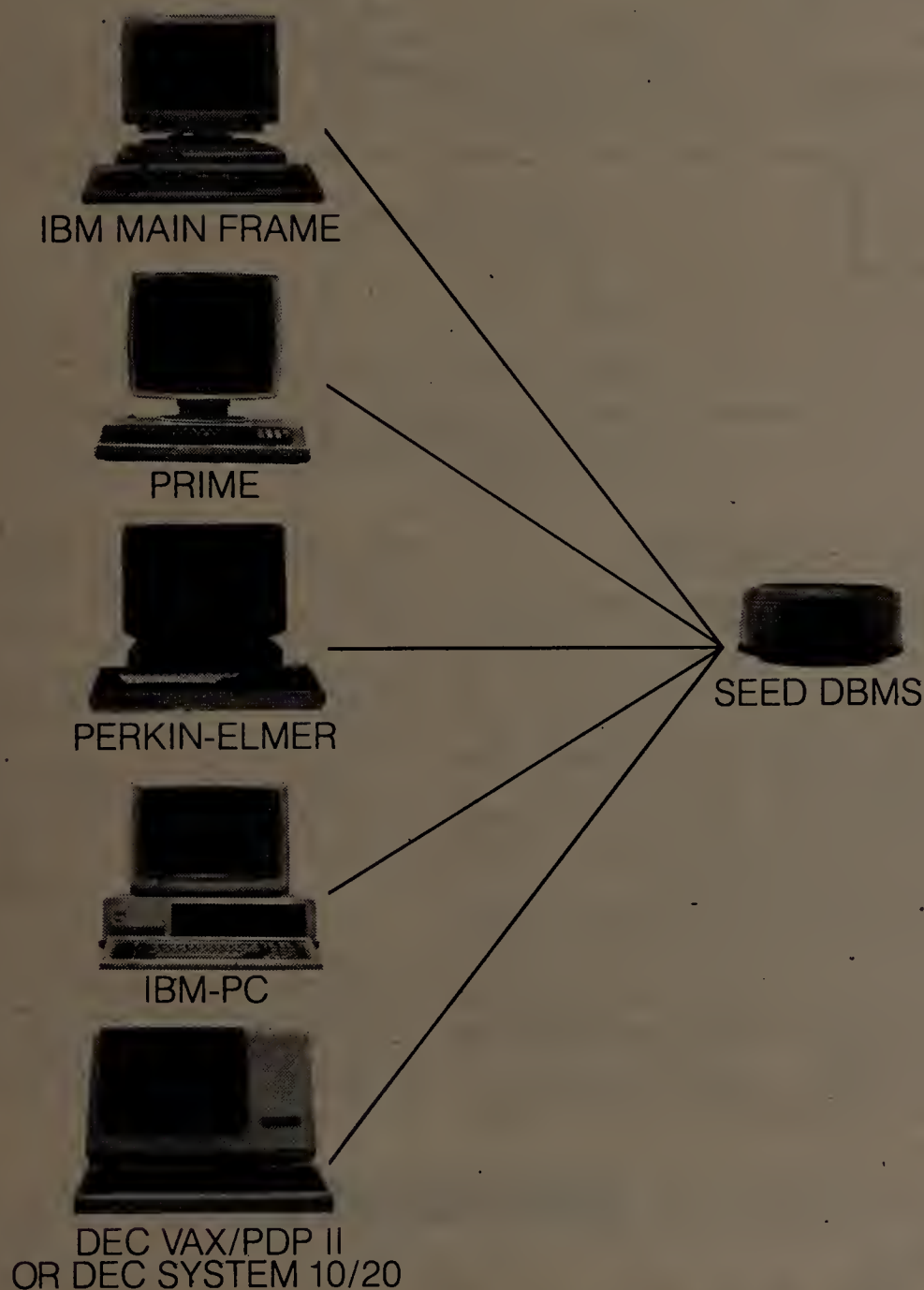
**FEBRUARY 14-15, WHITE PLAINS, N.Y. — Frost and Sullivan's First Annual Automated Manufacturing Systems Conference: A Market Assessment.** Contact: Carol Sapchin, Frost and Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

**FEBRUARY 14-16, PHILADELPHIA — 1984 Association for Computer Machinery (ACM) Computer Science Conference.** Contact: ACM, 11 W. 42nd St., New York, N.Y. 10036.

**FEBRUARY 14-16, CARY, N.C. — SAS Basics Portable Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

**FEBRUARY 14-17, CHICAGO — Vsam for Systems Programmers.** Contact: Software Information Services, P.O. Box 4132, Bellevue, Wash. 98009.

**FEBRUARY 14-17, ANAHEIM, CALIF. — Data Base Management Systems: Mini, Micro and Distributed Applications.** Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, Los Angeles, Calif. 90045. Also being held Feb. 28-March 2 in Baltimore.



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# EDITORIAL

## We need both

When daily newspapers started reporting last summer that computer hackers' footprints were showing up with increasing regularity in private data bases around the country, it didn't surprise anyone in the computer industry; unauthorized access has been a problem for years. Most of our lawmakers, however, were thrown into a tizzy. Many respond to the term "computer" with glazed eyes; throw in the term "hacker" and you can see them wondering how taxi drivers got involved in high-technology crime.

In short, the U.S. Congress is not prepared to consider issues relating to the introduction of high technology, issues that are fast taking center stage in public debate. Besides computer crime, these issues include VDT safety, privacy, copyrights and patents, manpower development, worker retraining and scientific education.

Congress' Office of Technology Assessment does good work on many of these issues, but the OTA is too reliant on the wishes of Congress for its work agenda and too deliberate to produce reports in a hurry. Militantly nonpartisan, the OTA never recommends courses of action and, in its efforts to represent all sides of a debate, too often produces only tepid, middle-of-the-road overviews of important, controversial issues. Its work is valuable, but it isn't enough.

Congress needs help, and it needs it right away. The proposal by the Association of Data Processing Service Organizations, Inc. that Congress set up a blue-ribbon panel of industry, academia and government representatives to study high-technology issues and their impact on society [CW, Jan. 16] is a good idea. A panel commissioned by Congress to report back in a short time with recommendations on these kinds of issues could be instrumental in shaping the information era in this country.

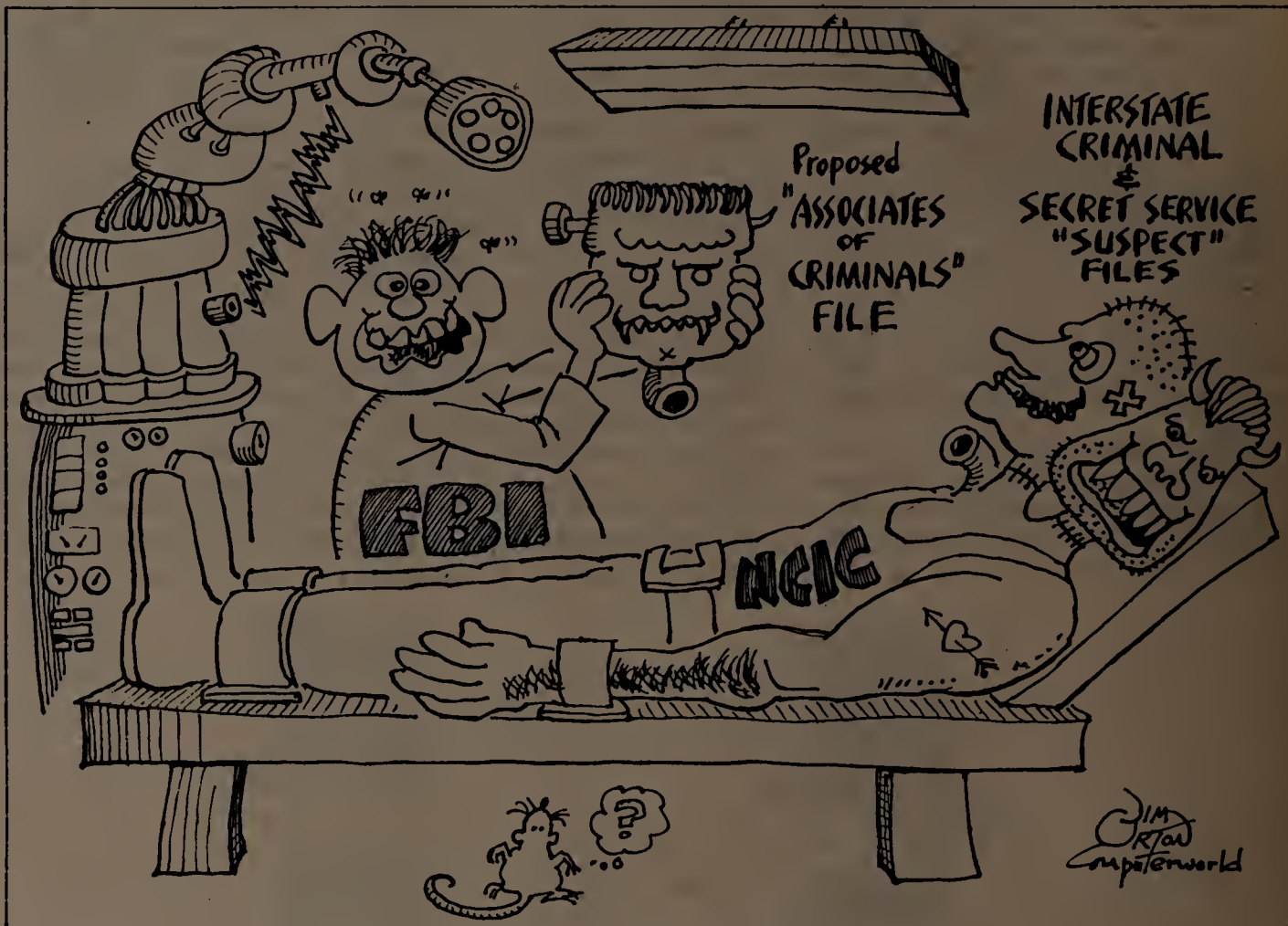
Of course, many in the computer industry will disagree with the findings and recommendations of this panel. There is nothing strange about that, and it does not invalidate the need for a rational approach to high-technology issues. Congress is going to consider these issues and pass laws on them no matter what. It is important that it have a firm, considered base of information when it does.

At first glance, it would seem the Information Age Institute planned by the Computer and Business Equipment Manufacturers Association may needlessly duplicate the work of the panel recommended by Adapso. But the two efforts are actually very complementary.

No one has a greater stake in the development of these issues than the information industry and its users. Various segments of these groups have begun lobbying Congress with their points of view. If they can formulate a unified approach to any of these issues, it will make whatever congressional action is needed that much easier and sensible.

If the Adapso- and Cbema-recommended panels differ on issues, it makes sense to have the opposing viewpoints quickly brought to light and clearly defined. And if the private sector and government-supported organization should happen to agree on approaches to various issues, the consensus will be overwhelmingly persuasive in whatever legislative action may be needed in the future.

The information era is hard upon us and will arrive with or without a rational, problem-solving effort, with or without congressional awareness and participation. The spread of high technology is a major societal development; things will go a lot more smoothly if all those affected, especially Congress, do some advance planning for it.



'Eat your heart out, Frankstein'

## LETTERS TO THE EDITOR

### Policy should exploit man-machine work transfer

The excellent summation of industrial policy in the article "Industrial policies in an election year" [CW, Dec. 26-Jan. 2] alludes to a fact that raises serious doubts about the wisdom of that policy.

In its Republican and Democratic manifestations, it embodies the principle that labor is one of the primary factors of production.

Technology is providing cost-effective substitutes for a growing percentage of the labor applied to routine tasks.

Advances in prospect indicate that the possibilities for the transfer of work from men to machines are virtually limitless.

Any policy that fails to exploit this potential in a rational manner could cause us to lag in produc-

tivity, innovation and cost-effectiveness. We would then lose markets and run the risk of domestic upheavals.

In my opinion, we would be better served by an approach that enhances individual freedom by giving positive effect to the seminal change that is taking place.

We should adopt an agenda that makes the most of the opportunity to transfer work to machines in a way that minimizes adverse consequences for people.

Brian Le Bert-Francis  
Falls Church, Va.

*Computerworld welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or less; they may be edited for the purposes of clarity and brevity. Letters should be addressed to Editor, Computerworld, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.*

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# VIEWPOINT

## To see a world in a grain of sand

### LECHT ON SCIENCE

CHARLES P. LECHT

The impressive history of integrated circuits, or chips, has been beautifully documented in a book by Stan Augarten, a Silicon Valley writer for the *Peninsula Times Tribune*. Titled *State of the Art*, Augarten's book presents us with a neatly organized photographic history of the chip. He takes us from 1947 through 1982 in two-page couplets, one for text, the other a full-page photograph of contemporary chip technology.

The book's awe-inspiring photographs, presented in this way, give us a temporal perspective on chip development that is singularly rewarding in its unfolding pulchritude. The regularity of patterns achieved, be it found in the simplest "image sensor charge-coupled device" or the most complex "gallium arsenide super-processor," would make a Navaho weaver green with envy and cause a nervous breakdown in the most competent Persian loomist. The beauty encountered in the contemplation of chip designs makes us wonder whether we are seeing the magnified handiwork of Lilliputian artisans. Like Gulliver unbound, we are amazed witnesses to science's architectural accomplishments in a much littler world.

Integrated circuit "architectronics" include just about every design ever made by man — and then some. That a single chip is usually far less than a quarter of an inch on a side and results from the collaborative effort of hundreds of technical specialists is truly astounding. Orchestration of their collective efforts rivals in complexity any that is needed to produce the objects of our macroscopic world. These multilayered mandalas etched in the realm of microscopy permit us an almost mysti-

cal vision that reaffirms what human beings can achieve through cooperation.

#### Fairchild flattening

Although research leading to today's chips includes work like that done at Bell Laboratories in the 1940s (for example, the Pont-Contact Transistor), it was not until 1959 that Fairchild Camera and Instrument Corp. engineers invented a process that could literally level a transistor to operate in a wafer-thin plane and be one-sixteenth of an inch in diameter to boot. As Augarten says, and we can only agree, the transistor is "the wheel, the steam engine, the wellspring of electronics." We must then conclude that in the importance of things in our technological revolution, the Fairchild flattening stands out as monumental. It overcame a major obstacle to chip creation.

After 1959, the leveling process continued at an ever-accelerating rate. And as photolithographic methods, chemistry and engraving techniques improved, so did the potential for increasing the number of gates (that is, transistors) per logic chip while shrinking its planar dimension. The proximity of chip constituents and the laws of physics determined how close chip elements — transistors, circuits and all — could be brought together before the system broke down due to heat, magnetic interference, wandering particles or what have you. The microspace race was on.

The overriding motive in the competition to make the chip as small as possible was — and is — our need to conserve energy in a universe running out of it. Flattening, thus, made sense not only in logic processors, but also in those of memory. The power needed to drive memories on ferromagnetic cores was incredibly expensive compared with what is needed

for even larger modern random-access memories (RAM) on chips. Thus, the impetus to produce maximum computing power with the least possible energy led to the microminiaturization of both logic and memory. This was done by further reducing their circuits — astoundingly, not necessarily in length, but in cross section — and reducing their components to pinpoint size and thin as chemistry would allow. That, in turn, resulted in more powerful computers, which (when applied to the process of generating even flatter, denser packaging) allowed us to create systems of even greater potency. And with these, increasingly beautiful and intricate designs emerged.

These I hold to be masterpieces of visual art. Today's artistic community might not catalog these as belonging to its aesthetic world; tomorrow's will. So, for the benefit of the future's chip aficionados, I offer a sampling of some recent classics.

American Micro Devices' Bit-Slice microprocessor of 1975, Model 2901, elaborates a landscaped layout of high-density tract housing suitable for sites on the moon or Mars.

The 1976 version of Zilog, Inc.'s Z80 processor, one of the most popular 8-bit processors ever made, suggests an undeniable resemblance to a modern Earth-city, complete with roads, gardens, apartment houses and parking lots.

The 1977 release of IBM's 64K-byte dynamic RAM is a symmetrical, gleaming beauty. Under a microscope and against a black background, it resembles nothing so much as a space colony in the luminescence of a golden sunset.

The 1979 version of the Motorola, Inc. 68000 and its successors appear as a huge governmental complex that would put Pentagon planners to shame.

And the chips kept getting better — and more beautiful. Xerox Corp.'s

Optical Mouse, circa 1980, displays a checkered electronic labyrinth that would baffle the Minotaur. Texas Instrument, Inc.'s 1980 64K-byte dynamic RAM presents a textured column of Byzantine intricacy. The 1981 Hewlett-Packard Co. 32-bit miniprocessor appears a keyboard music box containing all the works of Bach.

Possible interpretations of these morphistic mappings are limited only by our imaginations. It doesn't take much, however, to conclude that these patterns encapsulate and recapitulate our mid-cosmic reality in superdense format. The world of the microchip emerges as if it were a planetary surface seen from a satellite in the stratosphere. Yet each view seems to summarize our civilization's endeavors in art and science as though they were at arm's length in a gallery.

#### Marvel in form

The chip is truly a marvel in form as well as function. Concentrations of power enthroned in beautiful palaces of silver and sapphire, its chambers columned with gold and platinum, its corridors lined with niobium and other precious metals. And yet its chief constituent is the second most abundant substance on the surface of the earth: silicon.

Augarten points out that "in combination with oxygen, [silicon becomes] the chief ingredient of sand — which makes [William] Blake's lovely verse a fitting ode to the [integrated circuit]:

To see a world in a grain of sand  
And a Heaven in a wild flower,  
Hold infinity in your hand  
And eternity in an hour."

Through continued chip evolution, we may yet fulfill Blake's yearning.

*Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.*

## Confiscatability key to transporting micros overseas

### HUMAN CONNECTION

JACK STONE

Issac Newton I'm not, but I have recently discovered a new measure of systems quality — "figure of merit" we aging electrical engineers call it — which, though not expected to plunge the industry into technological turmoil, will surely enhance systems performance in one specialized set of circumstances, namely, when transporting one's beloved micro into the lesser civilized regions of the world.

To such conventional systems factors of maintainability, reliability, operability, survivability and shareability, I am adding the notion of confiscatability — the capability of a system to remain in its owner's possession while traveling overseas as opposed to being physically removed from same by members of the local constabulary, generally for an unfathomable reason.

Last winter, I met up with some difficulties in trying to motor my faithful Processor Technology Sol 20 across the Mexican border. It, a companion, my eldest son, Charlie, and I were bounced out of the country quite unceremoniously then because we were attempting to enter with the personal computer, in spite of the polished verbiage in Mexico's travel brochures and the assuaging statements of Mexico's tourism officials that "extend the hands of friendship to all visitors."

As near as we can figure, the customs officers were saying that they were protecting us from potential bandits or unscrupulous police personnel who might eye the machine during a "stakeout," place a high price on it (even though the market value of a six-year-old micro is something approaching that of a Timex 1000), intercept us on a lonely highway and take away the personal computer on some pretext or other, for

example, smuggling.

Well, it didn't take too much discussion to decide to make the trek again this year, what with all the bad weather lately, but it was not at all clear as to what computer facility we were going to take along. No way the Sol was going again, because it was proven that its "body print," that is, volume profile, was terribly obvious to the Mexican federales.

#### Osborne transportable

I returned again to the possibility of an Osborne Computer Corp. transportable that seemed initially appealing because of its packaging and its price (now a glorious bargain for only \$800 from a K St. vendor for a used system, including Micropro International Corp.'s Wordstar, in spite of its ridiculous 5-in. amber screen.)

The body print was certainly better than the Sol's, but my interest began to wane after I attempted to pick

up the machine, and I found that its 28 pounds seemed more like 128 pounds. Then I perked up when the salesman directed me to a special word processing package for the Osborne, called "Word-something-or-other," to be confused with all the other "Word"-oriented WP software titles. Then the salesman went on to advise me that he had no sample documentation. He wasn't sure what was provided, but he knew the programs were very "powerful" and "exactly what I needed," and "because I was such a good customer" (I'd never made a purchase there), he was going to give me 5% off.

I rejected the Osborne, not so much for its confiscatability, but for considerations of viability. Somehow, the idea of an archaic machine with unknown software supplied by an off-the-wall retailer seemed to fall just a bit short of my personal computer goals in spite of its highly favorable pricing. ‡







TOP

**IAX**

digital



## VIEWPOINT

# Moving into the world of technology

**READER'S  
PLATFORM**

ROBERT A. KING

Nine years ago it all began. The purpose was to supply the much-needed nutrition of fruit to the multitudes. The idea was to package the fruit economically and compactly and distribute it on schedule each

quarter of the year. The idea emerged to dehydrate the fruit for distribution and sell hydrating machines to the consumers. A fruit indexing system was incorporated to access quickly the necessary items.

Basically, the system works like this. The consumer owns a cardboard-and-vi-

nyl fruit storage unit in which he stores the current quarter's fruit shipment. As the need arises, he uses the fruit index to locate the correct fruit to be consumed. The consumer then removes the fruit and places it in the hydrating machine.

For years, business was adequate, but the number of

consumers increased. As technology advanced, it was decided to develop and market a new system of fruit distribution; why should the consumer go to so much trouble to receive the necessary fruit nutrition?

One idea that is being considered is the "on-line" system. This is where all the

consumers' fruit in a certain area is stored in one large main storage unit. The dehydrated fruit is shipped to this storage unit and then is made available to the consumers who use what are called "maindraters" and/or "mini-draters." The consumer makes a connection to the main storage by pushing buttons that put him on-line.

He then uses the storage units' indexing system to locate the needed fruit. As it is located, it then is shipped to the individual through a pipeline for consumption.

**Problem with systems**

A problem with this system is that sometimes it is not possible to make an immediate connection to the main storage unit or is slow in doing so. Another difficulty is that sometimes the connection is broken at a critical time, and the fruit is dematerialized as it passes through the pipeline and is lost to the consumer.

Upper management chose the microdrater as the integral component for the new system and utilized existing employees' talents to finalize the system. The technological advantage of the microdrater is that it not only provides on-site storage, hydrates and spoon-feeds the fruit to the consumers, but it has a built-in indexing system that is energy efficient. This has been termed a "stand-alone" system.

This seems to be the system of the future, only there are a few bugs to be worked out. Being that the multitudes require so much fruit, technology has yet to produce an adequate storage bin for the microdrater. But time will take of this.

Also, whereas in the old system the fruit was loaded into storage by a human, the microdrater requires that the fruit be loaded mechanically from microdrater cartridges. In the past, the fruit was dehydrated and distributed for us by another company with the facility to do this. What has to happen now is to find a microdrater cartridge processor to perform a similar service for us. It will be at that time that the microdrater "stand-alone" system of fruit distribution will be in use by the multitudes.

A minor question arises when discussing this type of system: "Will the consumers be willing to pay the substantial monetary increase in the price of the microdrater over the manual hydrating machine that they now use?" Time will tell us that.

This concludes this business report. Thank you. ‡

*King is computer operations manager at Micro-medex, Inc. in Englewood, Colo.*

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# SOFTWARE & SERVICES

## The evolution of the meddlers

### SOFTLINE

FRANK SWEET

"Why does the data base administrator keep meddling in my business? Worse yet, his goals are not the same as mine!" This often-voiced accusation is completely accurate. Data base administration does cross turf boundaries with distressing regularity. And its goals really don't seem to match those of the people whose business is meddled with. To see why this is inevitable, consider the data base administrator's evolution as an organizational unit.

The concept arose in 1971-72. Data base administration emerged when it appeared that shared master files were practical at last. Packages were being sold which seemed to solve the problems of different applications sharing the same set of files. A committee from IBM's Guide users group was formed to study the organizational implications, and the first data base administrator job description was published on Nov. 3, 1972. Later publications have not changed that description significantly.

But every one of the data base administrator's job functions was already in place in the traditional DP organization. File design, data security, file integrity, master backups, I/O software maintenance and training, data naming standards, record layout documentation and so forth were all being performed. In most shops, the tasks were being performed well. Since the job was getting done, why was the system changed?

The functions were dispersed throughout the organization. In the old DP shop, different people were responsible for different aspects of master file integrity:

- Users designed individual fields. For example, "marital status code" was defined to be 1-single, 2-married.

- Systems analysts designed records and files. They determined, for instance, that each purchase order record contained the field "vendor number" and

See MEDDLE page 40

## CICS gets Executrieve Eases on-line query for novices

FORT LEE, N.J. — On-Line Software International has announced a free-format, on-line IBM CICS query system that is said to use a simple English syntax.

Called Executrieve, the product is designed for users with no programming experience. The software allows users to query the data base and develop reports that include graphics. It operates under CICS in IBM OS and DOS environments without modification or reformatting, a spokesman said.

Users access the mainframe through "views" or groups of data fields matched for various user groups. User groups only have access to fields defined by data processing. Executrieve's Content Address

Method technology lets users locate information based upon content rather than pre-established keys or indexes, the spokesman said. It is said to use less overhead than standard accessing techniques.

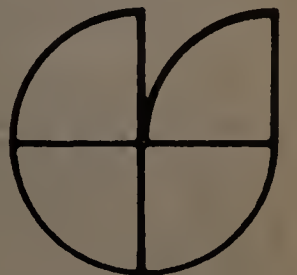
A nine-tier system of security is provided, and record count limitations can be imposed. The system can be installed in a few hours, the company claimed.

Introductory pricing is \$15,000 for DOS and \$20,000 for OS until March 1, after which prices will rise to \$18,000 for DOS and \$24,000 for OS, according to the vendor.

On-Line Software International, Two Executive Drive, Fort Lee, N.J. 07024.



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INTERNATIONAL**



Mantle out for CMS/41



STSC offers VM-based micro-mainframe link/42



Honeywell users get health care claims system/46

### INSIDE

■ DOS to OS conversion tool unveiled/41

■ Report writer available for System/38/47

## IBM hikes DSLO, license fees

IBM has increased its monthly license fees and Distributed System License Option (DSLO) prices on six program products.

The monthly license fee on the Professional Office System program product was increased from \$600 to \$700. Likewise, the DSLO for that package was increased from \$450 to \$525, IBM said.

The Cross System Product/Applications Development package now costs \$185 for a monthly license and \$140 for the DSLO. The product used to cost \$160 for the monthly license and \$120 under the DSLO, IBM said.

### Applications execution

The Cross System Product/Applications Execution now costs \$140 for a monthly license and \$105 under the DSLO. The program used to cost \$120/mo and \$90 under the DSLO.

The Cross System Product is an applications generation package for use with IBM CICS, DOS/VS, VM/SP/CMS, MVS/TSO, SSX/VSE and DPPX/SP operating environ-

ments, a spokeswoman said.

Also increased were prices for three program products for IBM's 8100 distributed processing system.

The basic license fee for the 8100 message-handling facility, DPPX/Presentation Services 3640-Execution Manager, was increased from \$71 to \$75 for a basic license, and the DSLO has been increased from \$52 to \$64/mo.

Likewise, the DPPX3640-Interactive Transaction Generator has been increased from \$297 to \$312/mo for a basic license, and the DSLO has been increased from \$222 to \$265/mo, the spokeswoman said.

Finally, the Distributed Office Support System/8100/Distributed Office Support Facility was increased from \$178 to \$187/mo for a basic license, according to the spokeswoman.

The DSLO has been increased from \$133 to \$159/mo, IBM said.

All price increases take effect in March 1984, the spokeswoman said.

IBM National Accounts Division, 1133 Westchester Ave., White Plains, N.Y. 10604.



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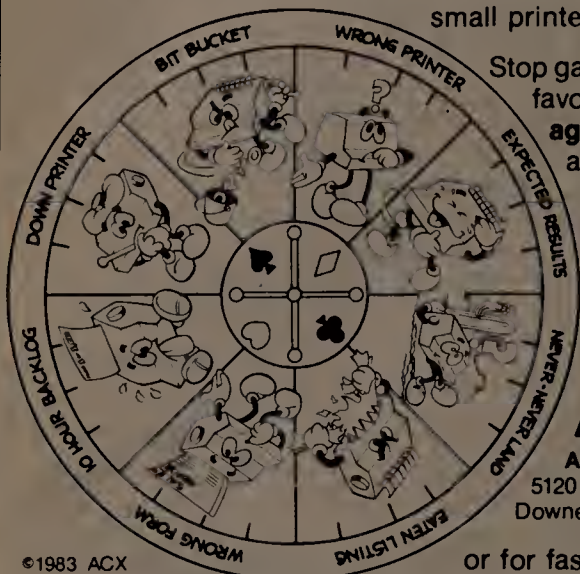




## VM/SP Printer Roulette

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### ACX

Autovative Computer Extensions, Inc.  
5120 Belmont Road, Suite B  
Downers Grove, Illinois 60515

or for faster access, (312) 971-1505.

## SOFTWARE & SERVICES

### MEDDLE from page 39

that the vendor master file was to be updated once each month.

■ Technical support selected and maintained nonapplication system software. System programmers were traditionally responsible for reorganizing Isam files, defragmenting packages and training systems and peripherals personnel in Vsam use.

■ DP operations answered for the physical well-being of the files. Operations supervisors saw to it that backup copies were sent off-site and that vendor master files and vendor transaction files were kept on two different spindles.

File sharing demanded that the functions be consolidated. Something happened when file sharing among different users' applications became

a realistic goal. It became evident that the central data pool could be achieved only if the responsibility for file integrity was centralized. To be shareable, files had to become orders of magnitude more reliable than ever before.

But consolidating the functions didn't eliminate them, hence the inevitable overlaps. Centralizing file reliability/integrity functions did not eliminate the concerns that older organizational units had toward master files. Indeed, such concerns cannot and should not be eliminated since, ultimately, computerized business data is the responsibility of the entire DP team.

Overlapping functions don't always match perfectly. The key concept is shared master files. The data base administrator's primary goal is to make master files shareable by all users and among all applications. Hence, the administrator is compelled to become involved in all aspects of file design and use in order to ensure that this goal is met:

■ Users — If three users have adopted a common set of marital status codes, but a new user wants to invent his own, the data base administrator reacts by encouraging the maverick to join the others.

■ Systems and programming — If our vendor master file contains the "vendor address" data, but a designer wants to replicate this field on each purchase order record, the data base administrator will point out the ease of vendor master file access when printing or displaying a purchase order and the risk of inconsistency if the field is replicated.

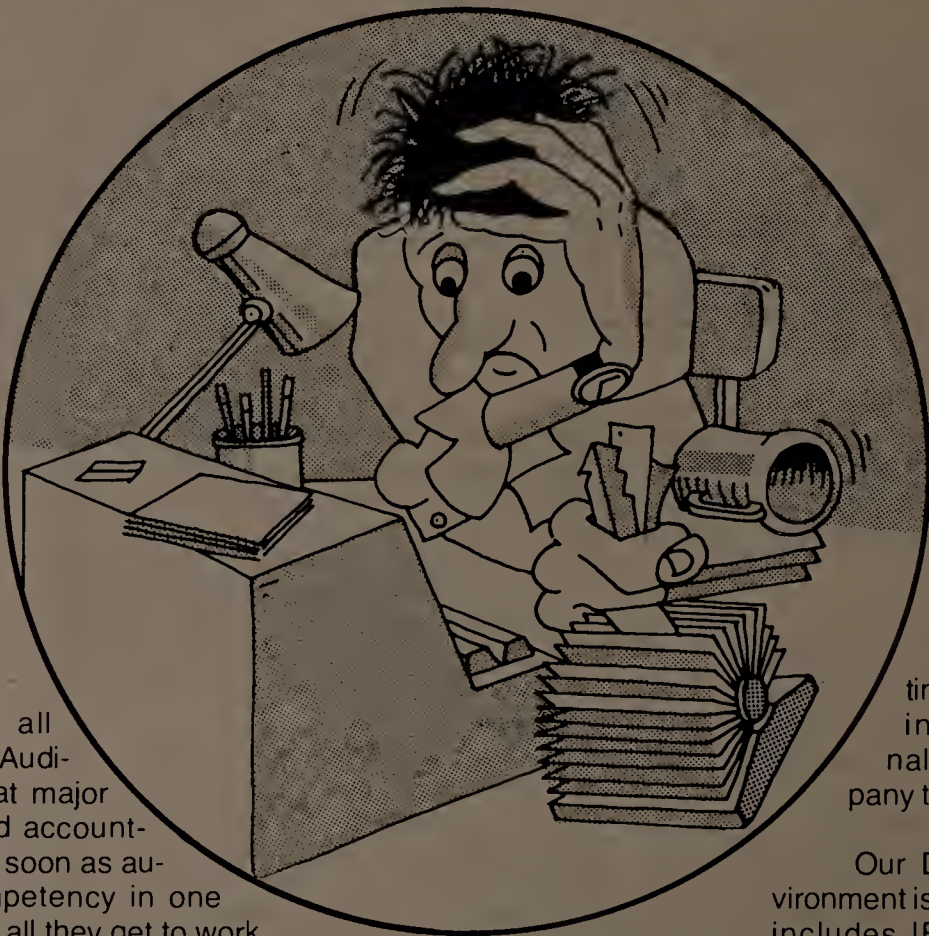
■ Technical support — If disk access software is proposed which is more machine-efficient than the data base package but does not roll back abended transactions and batch jobs without intervention, the data base administrator becomes involved by arguing against its adoption. Without automatic rollback, the files could be used only one system at a time.

■ DP operations — If DP operations neglects to make periodic tape backup copies of the files or forgets to store the backups off-site, the data base administrator should detect the lack and inform appropriate management of the jeopardy to the firm's business data.

In sum, don't be embarrassed to accuse data base administrators of meddling in your business. You're right. They do. It's their job.

*Sweet is corporate manager of data administration for the Charter Co. in Jacksonville, Fla., and a regular contributor to Computerworld's Softline column.*

## EDP Auditors... Being Pigeon-Holed Seldom Leaves Room For Advancement.



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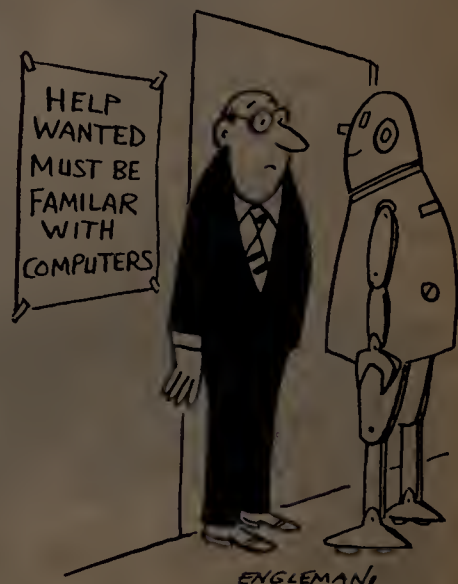
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## SOFTWARE &amp; SERVICES

## 'Changer II' supports OS

HOUSTON — Software Dynamics Corp. has announced the Changer II IBM DOS to OS conversion system.

A spokesman said the Changer II system organizes and manages the conversion effort and speeds it up so that application system changes are frozen for a shorter period of time. The package is said to force conformance to OS standards and conventions, and it can be modified to satisfy standardization requirements.

The spokesman said that Changer II is not an emulator, but actually converts source program code. Changer II is said to simplify the development of OS JCL by calculating efficient disk space allocations, block sizes, number of sort work files and sort work space allocations. It also formats JCL according to predefined standards, the spokesman said. Changer II is also said to ensure adherence to uniform naming conventions throughout the system, and it produces reports that monitor and organize the conversion effort.

Various DOS to OS conversion options are available, including a one-year lease of the Changer II conversion system for \$59,000.

*Software Dynamics, Suite 1000, One Allen Center, Houston, Texas 77002.*

## Mantis enhanced

CINCINNATI — Cincom Systems, Inc. has announced an IBM CMS version of its Mantis fourth-generation application development system.

Mantis is described as an on-line, interactive application development system which, the vendor said, allows for the implementation of entire applications without the need for batch processing. In the CMS environment, according to a spokesman, Mantis eliminates the majority of operating system and teleprocessing monitor overhead associated with other environments.

With Mantis, programmers reportedly can create screens, test and debug applications, document systems, put systems on security menus and release applications for production. The fourth-generation language is said to combine the flexibility of procedural languages and the efficiency of interpretive languages to enable users to implement top-down design, structured coding, step-level refinement and prototyping of systems.

Reportedly, applications developed under CMS Mantis are transferable to IBM's CICS Environ/1 or Cincom's TIS environments without change. In the CMS environment, Mantis is said to run without isolating each user, and security is maintained for individual or department files without affecting other system users. The CMS version is said to work with a variety of file-access methods, including Vsam, Cincom's Total data base management system (DBMS), TIS DBMS and standard Mantis files. All output printing is automatically routed to the system

printer.

The single-user charge for the CMS version of Mantis is \$28,000 for IBM Models 4321, 4331, 4361, 370/125, 370/135 and 370/138; \$45,000 for Models 4341, 4381 and 370/145 and up; and \$64,000 for IBM's 30 series mainframes.

*Cincom Systems, 2300 Montana Ave., Cincinnati, Ohio 45211.*

## Upgrades fit CMF, IMF

SUNNYVALE, Calif. — Boole & Babbage, Inc. has announced two information resource planning and con-

trol products, the CMF/Workload Planner and the IMF/System Manager.

The CMF/Workload Planner is a recent enhancement to the firm's Capacity Management Facility (CMF) architecture. It helps to provide future work load demand projections based on analysis of an organization's business activities.

According to the vendor, the Workload Planner analyzes historical work load activity data, condenses that data into a planning data base, determines transaction rate trends and constructs work load forecasts that are passed directly to CMF/Model, which produces projections of future service levels and resource requirements.

The IMF/System Manager, an enhancement to the IMS Management

Facility, was designed to improve the quality of IBM IMS service. It replaces with menus the discrete commands and responses required by IMS and permits review and control of the IMS resource status via scrollable panel displays, the vendor said.

The System Manager also automates routine procedures such as restarting transactions, programs or message regions following an abend; starting or restarting IBM integrated storage controller links; and notifying the appropriate personnel of significant occurrences within the system.

The Workload Planner is priced at \$15,000 for the first CPU; the System Manager perpetual license fee is \$28,500 for the first CPU.

*Boole & Babbage, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.*

## The system that lets you forget to remember.

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NCR provides worldwide service and support for the NCR 5300 COM Systems.



## SOFTWARE &amp; SERVICES

## Tool targets VM users

ROCKVILLE, Md. — STSC, Inc. has announced Dataport, said to be an information center tool that operates on IBM processors under IBM's VM/CMS and VM/SP operating systems and provides full screen data entry, display and analysis functions that interface with a variety of microcomputer and mainframe software products.

According to the vendor, Dataport's interfacing capabilities allow users to pull data from and send data to packages, including Information Builders, Inc.'s Focus; SAS Institute,

Inc.'s SAS; Execucum, Inc.'s IFPS; IBM's ADRS-II; Visicorp's Visicalc; and Lotus Development Corp.'s Lotus 1-2-3.

Dataport reportedly can also be interfaced with any mainframe or micro product that utilizes Software Arts, Inc.'s Data Interchange Format.

The vendor said Dataport uses spreadsheet-like windowing technology to handle full screen data entry and display, and it extends the two-dimensional spreadsheet format to as many as six dimensions. The package reportedly performs complex analysis through sophisticated computational logic and can perform calculations on entire rows or columns or on a single element.

Dataport is available for a one-time license fee of \$19,000, with an additional charge between \$2,000 and \$4,000 for each interface.

STSC, 2115 E. Jefferson St., Rockville, Md. 20852.

## Warner adds to data bank

NEW YORK, N.Y. — Warner Computer Systems, Inc. has announced the addition of the Disclosure II data base to its Financial Services Division data bank.

Disclosure II is said to be an enhanced data base that contains facts and figures on approximately 8,500 companies required to file annual and periodic reports with the Securities and Exchange Commission (SEC).

According to the vendor, more than 90 categories of information are available for each company, and standard reports include balance sheet information, income statements and financial ratios.

The fee structure, which is based on the type of reports accessed and the level of usage, ranges from \$2 to \$30 per connect hour.

Warner's Financial Services Division, 605 Third Ave., New York, N.Y. 10158.

## Firm widens maintenance

OAK BROOK, Ill. — Sentinel Computer Services, Inc. has announced the expansion of its maintenance services to include the IBM System/34 and System/38 within its network maintenance agreement.

Effective immediately, Sentinel will provide maintenance, installation, discontinuance and relocation services in its recently established industrial and communications network maintenance program. Under the program, Sentinel will provide complete maintenance management services for organizations with complex teleprocessing networks.

A spokesman said the typical monthly maintenance fee for a System/34 user is approximately \$207 and \$395 for a System/38 user.

Sentinel Computer Services, Suite 360, 1010 Jorie Blvd., Oak Brook, Ill. 60521.

## SYSTEMS SOFTWARE

### KOORTRONICS, INC.

#### Hierarch — The Secure OIS System

Koortronics, Inc. has announced Hierarch — The Secure OIS System, which is said to secure printouts and access to all system resources for the Wang Laboratories, Inc. Office Information System (OIS) small business computer.

According to the vendor, the security system was designed to secure printouts and access to system resources according to the user's hierarchical authority, the particular device and the concerned library. The package includes user password logon and automatic logoff procedure, document antiaccess lock, library security and control over individualized local menus.

The vendor said the system is compatible with all Wang OIS software Releases 5.0 and higher and is supplied on two OIS salable diskettes. The package is said to occupy less than 1,200 sectors of the OIS system resident volume. The system is priced at approximately \$10,000.

Koortronics, Two Park Ave., New York, N.Y. 10016.

### HELP/38 SYSTEMS Robot38 Version 3

Help/38 Systems, a division of Advance Circuits, Inc., has announced Version 3 of its Robot38, an automatic computer operator for the IBM System/38 mainframe.

According to the vendor, Version 3 contains 19 enhancements to the package, including Help text display, command prompting and syntax checking. Said to require four seconds of CPU time/hour, Robot38 reportedly improves response time for data entry operators by allowing the System/38 to be used up to 24 hours/day and by automating a number of maintenance tasks.

The productivity software is said to execute programs and commands without operator intervention or attendance, and it automatically schedules, runs and documents jobs during off hours.

The user can preschedule jobs to run at any time or on any selected date, with recurring jobs run on evenings or weekends, the vendor said. Robot38 will monitor and correct data communications line status, opening lines to receive transactions

during night or day while maintaining system security.

Version 3 of Robot38 is leased for \$20/mo per CPU or for a one-time cost of \$1,190 per CPU.

Help/38 Systems, 15102 Minnetonka Industrial Road, Minnetonka, Minn. 55343.

### D.B. SYSTEMS, INC.

#### Release 2.0 of Network Messenger

D.B. Systems, Inc. has announced Release 2.0 of its Network Messenger electronic mail system, which offers enhancements emphasizing office productivity and operational flexibility.

The enhanced version allows users to create various reusable letter, report and other formats to be stored permanently in a common or individual electronic filing cabinet. Message formats may be modified on-line and sent to various recipients as required, the vendor said.

Enhancements of the electronic mail system also provide for storage and on-line access to various system and office procedures that may be updated on-line by a central department, according to the vendor.

The DL/1 data base system operates under IBM's IMS/DC or CICS access methods.

The price is \$7,900.

D.B. Systems, 2 S. Patton Ave., Arlington Heights, Ill. 60005.

### TECHNETRONIC, INC.

#### Copernicus Model Release 2

Technetronic, Inc. has introduced its CPU-capacity management software for use in answering data center growth questions in IBM MVS and VM environments.

The Copernicus Model Release 2 predicts the effects on data center performance of hardware upgrades, work load increases and new applications.

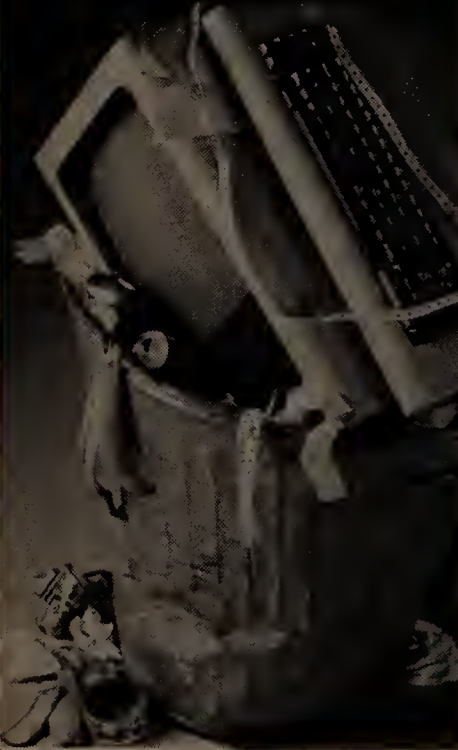
According to the vendor, the software interprets column-of-numbers output, providing the user with a graphics display of its predictions. Results can be presented in any of the eight-color graphics formats included with Copernicus.

The product is available as an option for Technetronic's Copernicus 820 system for a one-time license fee of \$7,000.

Technetronic, Suite 400, 7927 Jones Branch Drive, McLean, Va. 22102.

See SYSTEMS page 44

# dump the dumb



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With the help of NATURAL and ADABAS, Dade County officials now have a system that combines everything from electronic mail to centralized food purchasing for over 250 schools—while keeping track of each student's performance and needs.

So, whether you're managing a lunch program or just trying to digest a lot of information, you owe it to yourself to find out what NATURAL and ADABAS can do for you. We'll be glad to show you the rest of our menu.

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Reston, Virginia 22091  
(703) 860-5050

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## SOFTWARE &amp; SERVICES

## SYSTEMS from page 42

## COMPUTER INFORMATION SYSTEMS OF MASSACHUSETTS, INC.

VMS/Actsyst; Prolog

Computer Information Systems of Massachusetts, Inc. has announced a resource accounting package and utility designed for use with Digital Equipment Corp. VAX-11 computers running DEC's VMS operating system.

VMS/Actsyst reportedly is a menu-driven resource accounting package that monitors and bills system resources and software usage.

Prolog, said to be an optional extension of VMS/Actsyst, is a project resource accounting utility that lets

the user switch projects without logging out and in repeatedly.

VMS/Actsyst's billable resources are said to include connect time, CPU time, page faults, buffered I/O, direct I/O, volumes mounted, pages printed, disk storage and software license fees at prime and off-prime rates.

Resource usage information reportedly can be extracted interactively or set to run automatically at a user-specified time.

The products operate on single VAX-11 systems, VAX networks connected with DEC's Decnet and VAX clusters. They will be available in April.

VMS/Actsyst is priced at \$3,800 and Prolog at \$800.

Computer Information Systems, 165 Bay State Drive, Braintree, Mass. 02184.

## PRODUCTIVITY AIDS

## PACER SOFTWARE, INC.

C68; A68; L68; Lib68; X68; S68

Pacer Software, Inc. has announced an integrated cross-development environment for the Motorola, Inc. 68000 family that runs on Prime Computer, Inc. Prime 50 series computers.

The new products that make up the environment are designed for companies that develop microprocessor-based hardware and are said to be suitable for educational settings that plan to teach microprocessor architecture.

The C68 is a C cross-compiler for the Motorola 68000 and is source-level-compatible with the Prime native-

mode C compiler. Applications can be developed and debugged in the mini-based environment and later ported to the micro without losing compatibility, the vendor said.

The A68 is a Motorola Exormacs-compatible M68000 cross-assembler and includes support for long symbol names, multiple code sections and an extensive macro capability, the vendor said.

The L68 is a 68000 cross-linker with library support. The Lib68 is a 68000 object-module librarian.

The X68 is a cross-reference utility that can be utilized in conjunction with either L68 or A68. The S68, a 68000 simulator, is designed so that the content of the memory and registers can be examined and changed from within the simulator.

The C68, L68, Lib68 and X68 package costs \$5,000. The A68, an add-on to the package, costs \$2,000.

The A68, L68, Lib68 and X68 package sells for \$3,000, while the S68 costs \$1,500.

Pacer Software, 1227 Pearl St., La Jolla, Calif. 92037.

## APPLICATION PACKAGES

## META SOFTWARE, INC.

Charms

Meta Software, Inc. has announced the Chart Abstracting and Review Management System (Charms), which is said to be an on-line hospital-records software system.

According to the vendor, Charms is an interactive system that can be adapted to most hospital environments. The extensive clinical data collected by the system is integrated with a Diagnosis Related Grouping module, which generates the information on-line.

The system consists of three optional modules: The Medical Records Abstracting System (Mras) captures and provides clinical patient information and allows the user to enter, modify or make queries on all patient data, according to a spokesman for the company. The Missing Information Charts (MIC) module captures detailed information regarding the status of each patient chart. It reveals missing information, validates data and communicates that information to both doctors and management. The Utilization Review (UR) portion is a quality assurance system, which assists in the tracking of a patient's stay in the hospital, the spokesman said.

The Charms system was designed for use with IBM 370, 4300 and 303 series processors in IBM OS and DOS environments. The Mras module is priced at \$50,000, the MIC module at \$25,000 and the UR module at \$25,000.

Meta Software, 1860 Broadway, New York, N.Y. 10023.

## TEXPRINT, INC.

EZ Chart

Texprint, Inc. has announced EZ Chart, a graphics package for Digital Equipment Corp. PDP-11, LSI-11, VAX-11, PDP-10 and PDP-20 computers.

EZ Chart, which runs on either black-and-white or color terminals, produces four types of charts: line,

Continued on page 46

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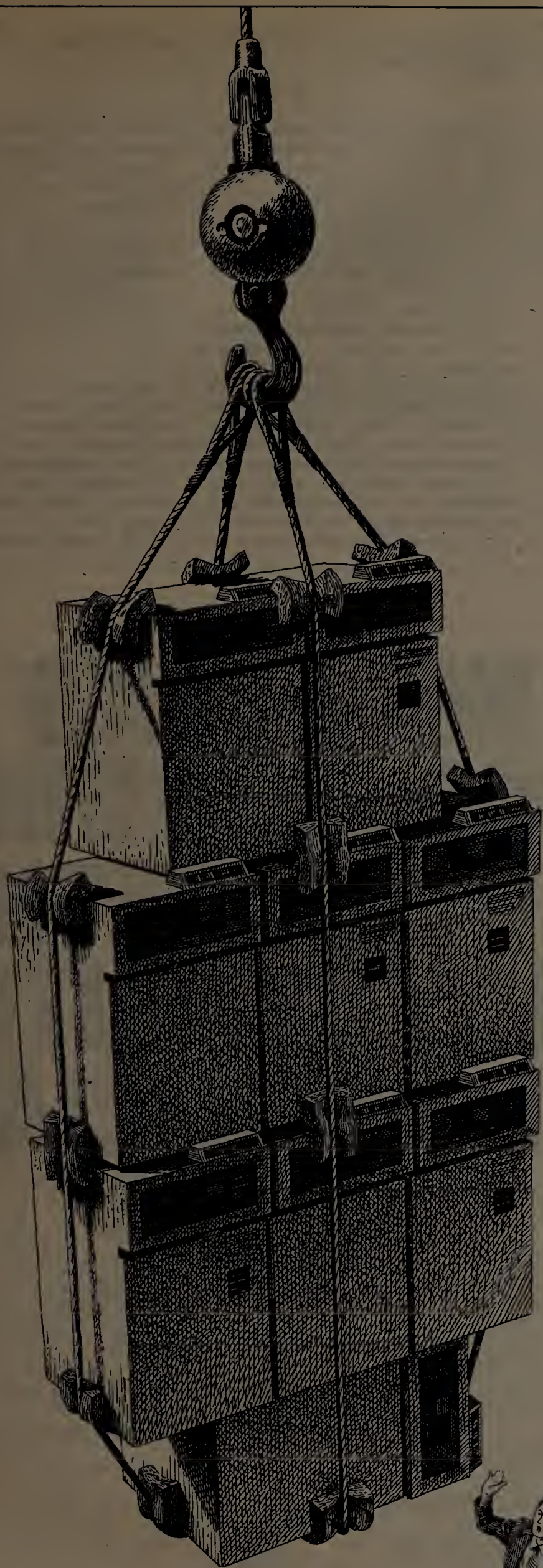
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The M860 and MASSNET are two of a family of Masstor Systems' strategic products that allow you to move, store and share data efficiently and economically.

To find out more, contact Dave Ball at Masstor Systems Corporation, 5200 Great America Parkway, Santa Clara, California 95050. (408) 988-1008. And cut your data storage problems down to size.

## MASSTOR SYSTEMS

Strategic solutions to moving, storing and sharing data.



## SOFTWARE &amp; SERVICES

Continued from page 44

bar, pie and scattergram, according to the company. The package runs interactively and includes a command-file feature for quick recall of often-used formats.

EZ Chart costs \$995 for the RT-11 operating system and is priced at \$1,750 for RSX-11M, RSTS/E, VMS, and Tops-20 operating systems.

*Texprint, 8 Blanchard Road, Burlington, Mass. 01803.*

#### COMPUTECH CORP.

##### Group Rating and Sales Proposal System

Computech Corp. has announced its on-line, interactive Group Rating and Sales Proposal System (GR&SP) for IBM 4300, 370 and 30 series processors.

Modular in design, GR&SP is said to feature on-line entry of census and coverage data with automatic policy rating and proposal page generation. The system reportedly leads the user through a logical progression of data entry screens to enable input of employee census information and selection of appropriate levels of coverage for each line of insurance selected. Error messages alert terminal operators to omissions or invalid entries.

The system also is said to support production of multiple versions of a proposal from a single input of employee census data, and pending proposals are maintained on a separate GR&SP data base for a user-specified time period. Built-in text editing facilities permit additions, deletions and changes to standard text paragraphs that the system creates based on the specific rating situation.

An integrated table management system is said to provide for on-line maintenance of multidimensional rate tables.

A permanent license for GR&SP is priced at \$220,000.

*Computech, 2534 Main St., Glastonbury, Conn. 06033.*

#### SOLUTIONS THROUGH ADVANCED TECHNOLOGY SYSTEMS, INC.

##### Claimsaver

Solutions Through, Advanced Technology Systems, Inc. (Stats) has introduced Claimsaver, a health care claims processing system for Honeywell, Inc. computers.

The system processes different types of health care claims, accommodates a wide range of insurance coverage and produces various management reports, according to the vendor. The package is designed for businesses that process health care claims internally.

The software requires Honeywell's Gcos 3.0 operating system. The package's price ranges from \$120,000 to \$400,000, depending on the installation. Yearly maintenance fees consist of 10% of the software purchase price.

*Stats, 244 Perimeter Center Pkwy. N.E., Atlanta, Ga. 30346.*

#### MCBA, INC.

##### Fingraph-MCBA Connection

MCBA, Inc. has announced Fingraph-MCBA Connection (FMX), said to be a package that transforms MCBA's general ledger data into graphics input for the Fingraph visual management support system.

FMX compresses data from the General Ledger package and gener-

ates graphics reports that correspond to a user's tabular general ledger reports, the vendor said.

The package, written in Dibol, runs on Digital Equipment Corp. VAX-11 minicomputers. Single-CPU source code license is available for \$1,000.

*MCBA, 2441 Honolulu Ave., Monrovia, Calif. 91020.*

#### SHARED FINANCIAL SYSTEMS, INC.

##### ON/2

Shared Financial Systems, Inc. has announced ON/2, an on-line financial software system designed to run on the Stratus/32 continuous processing system from Stratus Computer, Inc.

ON/2 supports a range of banking services within a variety of operat-

ing systems. It offers transaction support for demand deposit, time deposit, certificate of deposit, credit card and access card applications through automated teller machines and manned and point-of-sale terminals. Multiple-host, multiple-device and switch-type configurations are also maintained.

Seven major subsystems are combined to process transaction requests from a local network, a switch or host communication system environment, an information service, a batch system interface or a network/system control service environment, a spokesman said. Other features include distributed processing capabilities, device independence, network settlement and reconciliation and multitasking system architecture.

The system will be available in

May. It will be priced at \$150,000 for a permanent license.

*Shared Financial Systems, Suite 650, 15301 Dallas Pkwy., Dallas, Texas 75248.*

#### COMPUTER DATA CORP.

##### Distribution Resource Planning

Computer Data Corp. has announced a resource planning system for the wholesale distribution industry.

The Distribution Resource Planning (DRP) system is designed to work with Computer Data's sales order processing, inventory control and purchase management systems.

It reportedly allows distributors to anticipate lumpy demand with increased visibility into the future. It is said to handle seasonal and other

# NOW CCA'S MODEL 204 DBMS CAN DO SOMETHING EVERY EXECUTIVE CAN APPRECIATE.





## SOFTWARE &amp; SERVICES

changing customer ordering patterns, fluctuating transportation lead times and other variables.

The DRP is said to use various simulations for forecasting, making comparisons against actual historical performance and automatically selecting the strategy that most closely approximates actual performance.

The system runs on Hewlett-Packard Co. HP 3000 and Digital Equipment Corp. VAX-11 superminicomputers. It requires the sales order processing, inventory control and purchase management systems to operate.

The DRP will be available during the second quarter of 1984. The prerequisite systems are priced at \$15,000 each, and the DRP costs \$5,000.

*Computer Data, Eighth Floor,*

*5757 W. Century Blvd., Los Angeles, Calif., 90045.*

### DATA BASE MANAGEMENT SERVICES

**MICHAELS, ROSS & COLE LTD.**  
Mrc-Reporter Release 2.0

Michaels, Ross & Cole Ltd. has enhanced its Mrc-Reporter module for the IBM System/38, which allows users to create reports.

Release 2.0 of the report-writing module features shared-access path logic and free format-field entries that can be based on calculations from other fields. Other features in-

clude on-line Help, multilevel security, relational file joining, Boolean selection criteria and output device control, the vendor said.

Mrc-Reporter runs on the IBM System/38. A one-CPU license costs \$1,140, and the maintenance fee is priced at 10% per year.

*Michaels, Ross & Cole, Suite 501,  
1301 W. 22nd St., Oak Brook, Ill.  
60521.*

**BEDFORD RESEARCH  
ASSOCIATES, INC.**  
Interactive Signal Processing

Bedford Research Associates, Inc. has announced the Interactive Signal Processing package (ISP) for Digital Equipment Corp.'s VAX-11 series of

processors.

In a single, integrated system, according to the vendor, ISP combines signal processing functions, data management, two- and three-dimensional graphics capabilities and an interactive programming language. The vendor said the unified analysis approach incorporated with the package will establish a controlled environment for research and development.

ISP is said to reduce signal processing research and development time. The package allows a user to interactively apply one or more of the 42 available signal processing functions to an array of sampled data. The sampled data, processing parameters and other associated information can be accessed through ISP's file-management capabilities. Signal data and processing parameters can be displayed in various two- and three-dimensional formats utilizing one of ISP's 15 graphics functions, according to a spokesman for Bedford Research Associates.

ISP is also programmable, allowing a user to develop more complex applications with loops, conditional branching and embedded arithmetic expressions.

The package licenses for \$9,500, the spokesman said.

*Bedford Research Associates, 4  
DeAngelo Drive, Bedford, Mass.  
01730.*

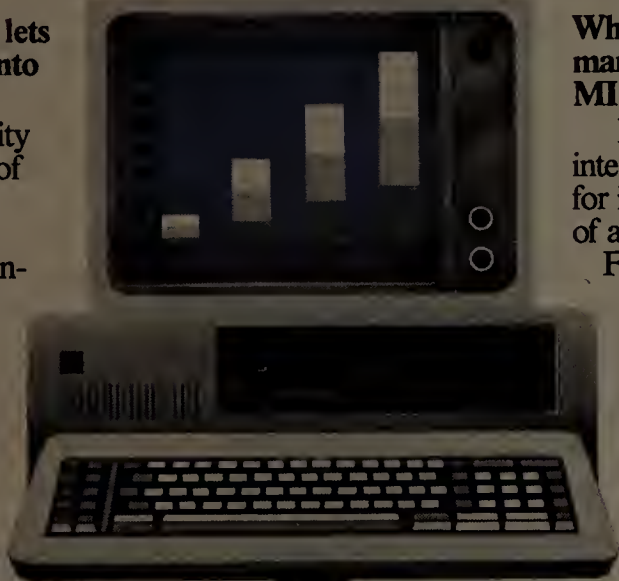
# TALK SENSE TO THE IBM PC.

Introducing PC/204, a link that lets PC users turn mainframe data into spreadsheets effortlessly.

PC/204, the newest productivity tool from Computer Corporation of America, is a powerful, efficient, easy-to-use software link between IBM personal computers and mainframes. It effectively answers the pressing problem of how to let corporate managers take full advantage of today's personal computers for making decisions, while also giving them access to the corporate database in a format they can use.

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Computer Corporation of America  
Four Cambridge Center, Cambridge, MA 02142 (617) 492-8860

CW1/23PC

#### CCA's Executive DBMS Seminar Schedule

February	March	March (cont'd)	April	April (cont'd)
Denver	Salt Lake City	Richmond	Phoenix	Washington, D.C.
Dallas	Tulsa	Hartford	Little Rock	Boston
San Francisco	Houston	Rochester	New Orleans	Albany
Seattle	Portland, OR	Saddle Brook, NJ	Anchorage	Princeton
Los Angeles	Honolulu	New York	San Diego	Raleigh
Chicago	Minneapolis	Jacksonville	St. Louis	
Madison, WI	Detroit	Tallahassee	Cleveland	
Philadelphia	Columbus, OH		Dayton	
Boston	Louisville		Philadelphia	
Ft. Lauderdale	Pittsburgh		Norfolk	

## LANGUAGES

### MUMPS USERS GROUP

*ANS Mumps: Software Engineering  
Evolution Toward the Fifth Generation*

The Mumps Users Group has published *ANS Mumps: Software Engineering Evolution Toward the Fifth Generation*, which includes a section on the evolution of the programming language since its inception in 1966.

The publication also includes a 13-page set of tables comparing more than 40 available Mumps implementations and including the name, address and phone numbers of the sources. It also offers a list of hardware from 22 suppliers for which Mumps implementations exist.

A Software Engineering Methods section examines three implementations, including the development of a software data base, terminal-to-terminal portability and a color graphics workstation.

The publication is available for \$5 for association members and \$6 for nonmembers, plus a 10% shipping charge, according to a spokesman for the users group.

*Mumps Users Group, Suite 308,  
4321 Hartwick Road, College Park,*

### PERFORMANCE SOFTWARE GROUP Fastran

Performance Software Group has announced Fastran, a compiler for Hewlett-Packard Co. HP 3000 Transact source code.

According to the vendor, CPU times are improved by two to 30 times using the compiler.

The product has been designed to run on any HP 3000. An HP SPL compiler is also necessary, the vendor said.

The price is \$10,000.

*Performance Software Group, P.O.  
Box 1464, Sandy Spring, Md. 20860.*



## SOFTWARE &amp; SERVICES

## REMOTE COMPUTING SERVICES

INFORMATION ACCESS CO.  
Search Helper/prepaid searches

Information Access Co. (IAC) has announced the combination of its Search Helper microcomputer software with a package of prepaid searches designed to reduce the average cost of a search of a company's on-line data bases.

According to the vendor, Search Helper provides menus to coach the user in establishing search parameters off-line.

Once the search criteria are established, the package automatically dials IAC's Dialog Information Services, and the search begins.

Search Helper is currently designed for use with the IBM Personal Computer, the Apple Computer, Inc. Apple IIe and Apple II+ and the Eagle Computer, Inc. Eagle II.

The combination package includes an annual Search Helper license, priced at \$200, and 700 prepaid searches, valued at \$1,750, for a cost of \$1,950.

The package is said to reduce the cost of a typical search from \$15 to \$2.50.

IAC indexes on-line through Dialog include Newsearch, the Magazine Index, the Trade and Industry Index, the Legal Resource Index and the National Newspaper Index, according to a spokesman.

IAC, 404 Sixth Ave., Menlo Park, Calif. 94025.

NEWTON-EVANS  
RESEARCH CO.

*Guide to the Remote Computing Services Industry*

Newton-Evans Research Co. has announced the publication of the third edition of its single-volume *Guide to the Remote Computing Services Industry*.

A condensation of its sources of information on the remote computing services (RCS) industry, Newton-Evans' guide is organized around four major sections.

The first section consists of extracts of original research reports based on periodic surveys of the RCS marketplace, plus results from studies planned for 1984 as they become published.

The second section is a collection

of the firm's monthly publication "The RCS Industry Newsletter."

A third section includes detailed profiles of the most important RCS suppliers. The fourth section is an industry analysis.

The basic subscription price is \$595.

Newton-Evans Research, Suite 204, 10176 Baltimore National Pike, Ellicott City, Md. 21043.

## ON-LINE DATA BASES

## CAUSE

On-line member data base

Cause, a professional association for development, use and management of information systems in higher education, has announced that on-line information from its members' institutional profiles is available to its members.

Information from 150 data processing departments with 10 types of applications, including financial management, admissions and records and physical operation, has been placed in a data base, according to the vendor.

Members call the Cause office, and staff members use an on-line system to find the needed information.

Data may be selected by a variety of categories. There is no charge for the service.

Cause memberships cost between \$100 and \$1,000, depending on the size of the institution.

Cause National Office, 737 29th St., Boulder, Colo. 80303.

## METHODOLOGIES

AGS MANAGEMENT  
SYSTEMS, INC.

Structured analysis course

AGS Management Systems, Inc. has announced the first of a five-course series on structured techniques.

"Structured Analysis: Tools and Techniques" will be conducted Feb. 21-23 and March 27-29 at the AGS Training Center in Philadelphia.

The three-day workshop is designed as an introduction to the analysis process and will cover data-flow diagrams, data dictionaries and process descriptions, according to the sponsors.

The fee for the workshop is \$550.

AGS Management Systems, 890 Valley Forge Plaza, King of Prussia, Pa. 19406.

# "Best seminar I attended on payroll/personnel systems!"

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To register, call Christine Hanavan at (201) 331-1600.

## Seminar Schedule

State	City	Date	State	City	Date
Alabama	Huntsville	March 6	Ohio	Cincinnati	February 29
Arkansas	Little Rock	February 9		Cleveland	February 2
California	Anaheim	March 13		Columbus	February 16
	Los Angeles	February 1	Oklahoma	Tulsa	March 13
	San Francisco	February 8	Pennsylvania	Philadelphia	February 2
	San Jose	March 8		Pittsburgh	February 23
	Santa Monica	February 22	South Carolina	Greenville	February 22
Colorado	Denver	February 28	Tennessee	Memphis	January 24
Connecticut	New Haven	February 9	Texas	Austin	February 1
Dist. of Columbia	Washington	February 16		Dallas	February 15
Florida	Miami	March 20		Houston	February 23
	Tampa	February 8		San Antonio	March 8
Georgia	Atlanta	February 1	Virginia	Richmond	February 28
Illinois	Chicago	February 23	Wisconsin	Madison	February 9
	Oak Brook	January 25		Milwaukee	February 29
Indiana	Fort Wayne	February 8			
	Indianapolis	March 1	Canada	Toronto, Ontario	March 1
Kentucky	Louisville	February 16			
Louisiana	Baton Rouge	March 22			
	Shreveport	January 26			
Massachusetts	Boston	March 6			
Michigan	Detroit	February 1			
	Grand Rapids	February 21			
Minnesota	Minneapolis	February 15			
Missouri	St. Louis	March 21			
Nebraska	Omaha	March 7			
New Jersey	West Orange	March 8			
New York	New York	February 21			
	Rochester	January 26			
North Carolina	Greensboro	March 14			





# COMMUNICATIONS

## FCC still-facing AT&T petitions

**WASHINGTON WIRE**

PHIL  
HIRSCH

AT&T and its recently divested operating companies have begun another attempt to change the Federal Communications Commission's Second Computer Inquiry decision, this one aimed at the decision's provisions on protocol conversion.

Already pending at the commission are petitions from AT&T and the operating companies seeking reconsideration of a ruling last summer (Docket 81-216) that wideband channel interfaces constitute terminal equipment and that carriers must therefore order that equipment through separate subsidiaries or an equivalent alternative.

Bell South, one of the newly created regional holding companies, recently came up with an alternative that appears to be less than equivalent. And independent private branch exchange manufacturers have filed objections to "enhanced" Centrex-CO services that allegedly cross the line established in Computer Decision II between basic and enhanced services.

The latest development consists of petitions filed early this month by AT&T and two regional holding companies, American Information Technology (Ameritech) and U.S. West. They want the FCC to let AT&T and its former subsidiaries perform end-to-end protocol conversion as part of a basic transmission service.

In Computer Decision II, intranetwork protocol conversion is part of a basic service, but conversions involving information that reaches the end user are not. AT&T and the regional holding compa-

See **AT&T** page 51

## ISDN tech building up All-digital transmission evolving

By Lynn Haber  
CW Staff

An integrated services digital network (ISDN) may be more a vision than a reality at the moment, but some pieces of its architecture are already in place.

For instance, AT&T last month announced its Circuit-Switched Digital Capability (CSDC) technology, which will let computers send voice, graphics and data transmissions at high speeds over the same lines that can be used for regular phone calls [CW, Jan. 9].

AT&T's AIS Net 1000, IBM's Information Network, the General Electric Information Services Co. (Geisco) and Tymshare Co. are also part of the evolution toward the all-digital transmission, switching and interfacing of voice, data, video and image applications.

"Some of these nascent ISDNs were in place all along, such as Geisco. Others are brand new — IBM's Information Network

— and others are pared parts of systems such as AT&T's residue network after the divestiture," according to Charles P. Lecht, chairman of Lecht Sciences, Inc., a New York-based creative lab and think tank.

### Large-scale evolution

Dixon Doll, president of the DMW Group of Ann Arbor, Mich., said, "What you're really talking about, regarding the buildup of ISDNs, is the phaseout of the analog and the phase-in of the digital. And that's something that's been a very large-scale evolutionary process which began about 10 to 15 years ago."

The fundamental idea behind ISDNs is the notion of building one huge digital network in which a number of technologies are utilized to deliver a combination of dedicated lines, switch services and transaction communications to subscribers.

See **ISDN** page 51

## Study finds ignorance of ISDNs

By Lynn Haber  
CW Staff

WELLESLEY, Mass. — Ninety-one percent of data terminal manufacturers don't have a clue about what integrated services digital networks (ISDN) are. And of the 9% of data terminal manufacturers who have heard of ISDNs, none has begun an ISDN product planning strategy, according to a study recently released here.

An ISDN represents the future structure of the current public-switched telephone network. ISDNs combine voice, data, video and other communications services into a single digital link.

The study, "The ISDN Evolution: A

Strategic Analysis," prepared by Venture Development Corp., reveals that data terminal manufacturers exhibit the lowest level of awareness pertaining to ISDN standardization activities among future ISDN hardware suppliers.

"Data terminal manufacturers typically follow the lead of manufacturers of equipment to which terminals are attached — and that is computers. They do what everybody else does," said Marc H. Rudov, manager of the communications consulting division at Venture Development.

"I guess they look at their business plans and they must not see anything

See **STUDY** page 54



Call records  
polled from multi-  
ple sites from CP  
National/57



An automatic  
switching device  
will interface  
most devices to  
host/61

**WANG**

Wang DVX en-  
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### INSIDE

■ Another voice/  
data integrated  
workstation has  
been brought out  
by Ambl  
Corp./56

■ Amdahl Corp.  
announces a net-  
work concentra-  
tor/57

## Orion Software unveils net for System/34, 36, 38

WALTHAM, Mass. — Orion Software, Inc. has introduced Network Orion, a modular family of generalized communications software for the IBM System/34, 36 and 38 user.

According to the vendor, Network Orion combines various methods of communication and types of traffic. The software includes data processing, teletype (electronic mail) and text transmission. Users of the network can combine text and/or data files with teletypes for transmission to any remote location.

Information can be sent to other IBM System/34, 36 and 38 machines, to word processors from Wang Laboratories, Inc. and IBM and to simple remote data terminals. It also enables information to be sent via external networks.

Regardless of the destination system of networks, the procedures for transmitting information are identical. Through standard menus, the user specifies the information to be sent and addresses it to a location, a department or an individual user. Transmissions can be a free-form

message, a word processing document, software and/or records from a data base file.

The intelligence of Network Orion is contained in three modules, the Network Orion Control Facility, the Text and Message Facility and the Remote Data Processing Facility.

The Network Orion Control Facility (NOCF) directs information traffic by reference to a predetermined network configuration. Initially, the network configuration and control rules are defined to NOCF as a series of profiles that detail the locations on the network, the machines connected at each location, authorized users or groups of users, transmission priorities and scheduled transmission events.

The Text and Message Facility (TAMF) provides for office automation facilities such as communication of information as free-form messages typed in at a keyboard, word processed documents, extracts from data base files or a combination. The information can be transmitted in a variety of ways, such as via General

Electric Information Services Co.'s Quik-Comm electronic mail, direct dial to other System/34, 36 and 38 computers or word processors or via the Telex network.

The third module, the Remote Data Processing Facility (RDPF), was designed to meet the requirements for distributed data processing, including the transfer of data and program files, spool items, library and source members.

In addition, Remote Job Management allows jobs to be scheduled and executed at remote sites under control of the central site data processing management. Multisystem networks of System/34, 36 and 38 computers can thus update remote fields, perform software maintenance, execute jobs on a scheduled basis at remote sites and receive data from remote sites for consolidation reporting.

The communications options of Network Orion can be extended by adding new communications modules for other devices such as mainframe computers, other network facilities

and office automation facilities. These will be made available according to demand and technological development, and the additions require no change to existing Network Orion locations other than the installation of new communications modules.

Typical applications include consolidation of information from several remote locations, the control and transfer of new application programs and procedures, data base updating, order processing between multiple sites, transmission and receipt of day-to-day operational transactions and other company reports, data processing or text-related activities, as well as single- or multiple-site electronic mail creation and transmission.

Network Orion is modularly priced. Licenses begin at \$1,600 for a single-site electronic mail capability on a System/34 and 36. The new Network Orion is available for immediate delivery on a System/38.

Orion Software, Suite 200, 400-2 Totten Pond Road, Waltham, Mass. 02154.



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VM Level			
# VM Terminals			



## COMMUNICATIONS

**AT&T** from page 49

nies can convert the latter only if they first obtain a waiver from the FCC.

When the Computer Decision II protocol provision was adopted about three years ago, the FCC realized it might require modification and launched an inquiry (Docket 80-756).

**FCC decisions**

When the investigation was completed last November, the commission decided:

■ The basic protocol conversion policy would not be changed.

■ Conversion of control signals — for example, the dialing pulses used in telephone communication to designate the number of the called party and the address bits attached to data packets — are part of a basic service.

■ All other end-to-end signal conversions constitute enhanced services, but waivers will be granted more quickly and easily for some of these services than for others.

The favored group includes internetwork protocol conversions (X.25 to X.75) and "a change in electrical interface characteristics to facilitate transitional introduction of new technology." One example: the conversion of a digital voice input to an analog voice output.

In their petitions for reconsideration submitted this month, AT&T and the two regional holding companies objected strenuously to continuation of the waiver requirement.

AT&T contended that "an ad hoc waiver process is unworkable, harmful to competition and contrary to the movement toward minimization of regulatory oversight. ... A carrier ... cannot ... invest ... time, money and other resources in innovative design in the face of fundamental regulatory uncertainty over whether it will be allowed to use the product of its investment."

**Waiver requirement**

Because of the waiver requirement, AT&T added, carriers would have to reveal their business plans to competitors in advance. AT&T said the commission should "adopt rules permitting AT&T to provide code and protocol conversions on the same unrestricted basis as other carriers."

The three petitioners also said the FCC should:

■ Declare that all protocol conversions now performed within the network are "basic."

■ Allow the carriers to perform internetwork protocol conversions and "conversions of electrical signals incident to changes in transmission media or techniques" on a nonwaiver basis.

**ISDN** from page 49

"ISDN will consist of different pieces," Doll said. "It will consist of digital local distribution facilities, digital switches [and] digital long-haul services. [Long-haul services will be a mixture of satellite, fiber optics and microwave.]

"And the local distribution facilities or the regional or metropolitan services will be provided using combina-

tions of coaxial cable and fiber and digital termination services. There will also be other technologies like local-area data transmission," Doll explained.

**ISDN architecture**

One way to conceptualize ISDN architecture is to think of it in terms of a big computer.

"Think of it as a massive hi-fi set which can handle everything from alarm signals

to video signals and everything in between, at varying speeds and volumes. It will allow everything from the simplest sending of a message from point A to point B, to the sending of a whole television show, to doing data processing from the moment the data is received and shipped," Lecht said. "It's a big computer system as well as a massive network."

ISDN is an architecture, not a single system. There

are bits and pieces of it in place now and some networks that more or less comply with the provisions of ISDN as it has been defined. "ISDN itself isn't the magic pot of gold at the end of the rainbow," Doll said. "It's a concept that will continue to evolve or change over time. There'll be a little bit more of it every year for as far out as one can see."

While these embryonic  
See ISDN page 54

# WHICH TWIN HAS THE TANDBERG?

The ergonomic terminal that puts performance at your fingertips

When it comes to performance, the keyboard of the new TDV 2200S puts more features at your fingertips than any other terminal on the market today. Features such as sixteen soft switches that store and recall up to 416 commonly used words, phrases or code sequences; up to 1024 different characters in a single terminal including mathematic and semi-graphic symbols, Latin, Greek, Cyrillic and other alphabets; full editing and cursor control capabilities; a ten key numeric pad; and communications keys for character, page, block or line/field transmission.

The TDV 2200S will emulate virtually any popular terminal and protocol. It can be equipped with up to 56K bytes of memory and some models will store up to eight pages of data. It has an 8085-2 chip for ultra-high speed processing; superb communications capabilities including networking; and optional high resolution business graphics.

But the TDV 2200S is a lot more than a high performance terminal. It is also the first terminal that met the stringent requirements of the German ergonomic standard for operator comfort and safety. This means that the screen not only tilts, but it swivels, raises and lowers to fit all size people, in any room light at any angle. And the keyboard doesn't merely detach. It's a low profile work

of art, so slim that it can be used in complete comfort on a standard desk.

To ease operator eye strain the TDV 2200S features a 15" green on green or black on white screen with big letters; a 70Hz flicker-free refresh rate; an anti-reflex tube and matte finish to minimize reflection and a patented Equilite video system that displays both vertical and horizontal lines with the same intensity.

But to truly appreciate the performance and comfort of the TDV 2200S you should really try one for yourself. We'll be happy to put one at your fingertips. Just give us a call. Tandberg Data, Inc., P.O. Box 99, Labriola Court, Armonk, New York 10504. Phone: (914) 273-6400, Telex: 137357 Tanberg Arnk.

## TANDBERG DATA

Tandberg Data, Inc.







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Electronic Document Communications, now available on System 85 and DIMENSION PBX, is an easy-to-learn software application that's hard to beat. Because it integrates your office by letting everyone prepare, send and store documents and messages with the speed and efficiency of a computer. So you can have better access to the right information in the right form at the right time.

Electronic Document Communications can streamline your office in three ways:

*Preparing Information*—Reduces the time, effort, cost and wasted paper between drafts by electronically creating, editing and

formatting documents and messages. "The Composer," a special software feature, checks spelling, grammar, punctuation and usage. EDC even measures whether documents are readable by technical and nontechnical readers.

*Moving Information*—Speeds documents to many people in different locations simultaneously so they can act decisively. EDC allows you to determine the timing and cost of delivery, and even check to find out when documents were received. Using a password ensures the privacy of your messages.

*Managing and Storing Information*—Locates documents, and retrieves and evalu-





ates contents quickly and easily with electronic files—while reducing the possibility of losing documents. An electronic “Mailbox” allows you to quickly determine which documents to read first. EDC reduces storing and filing costs with an electronic “Archives” that allows for either short- or long-term storage, and the “Wastebasket” which enables you to permanently delete items after a determined period of time. There’s even an electronic “Calendar” that checks personal schedules and arranges mutually convenient meetings.

Not only will all these features help you further integrate your office, Electronic Document Communications is itself just one

part of AT&T’s line of completely integrated business systems. For state-of-the-art office automation, you can implement EDC in conjunction with other applications software like Message Center/Directory, a call coverage and message system. These office management applications are now available on System 85 and DIMENSION® 600 and 2000 systems with the Applications Processor.

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Systems Laboratories. AT&T Western Electric produces EDC, and AT&T Information Systems will maintain it with comprehensive, conscientious service from the largest service organization in the industry. To find out more, call toll-free 1-800-247-1212, Ext. 879M.

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## COMMUNICATIONS

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**ISDN** from page 51

forms of ISDNs presently offer limited ISDN-type capabilities, the future use of a more solidly in-place system has far-reaching capabilities.

"They'll be used the way a computer would be used," Lecht said.

"Only this will be the computer of your dreams. What about a computer that not only distributes into different rooms in different build-

ings, but also to different cities and countries? You can still think of it as one computer which is in fact a house for other machines — thousands of machines in AT&T's case — so you have the capacity to have computer access and data delivery any place and the power to process in the network [rather than going] into your own data center," Lecht speculated.

"My forecast is that by the

end of this decade, maybe 80% to 90% of all data processing in America will be acquired that way, that the majority of data processing — that is the powers that computer systems give us — will be distributable through networks [and] obtainable through networks, and nothing less than a terminal at the recipient's or deliverer's location is going to be required," according to Lecht.

**STUDY** from page 49

that's going to affect their business. Perhaps they think that this is so far into the future that they're not going to worry about it now," Rudov continued.

The Consultative Committee on International Telephony and Telegraphy (CCITT) has been developing worldwide ISDN standards during the past four years through a special study group. The CCITT will unveil its ISDN recommendations in Geneva, Switzerland, in November 1984.

**Two basic factors**

According to the study, the motivations for establishing ISDN standards originated from two basic factors. First, the telephone network — which originally was all analog — has been evolving increasingly into a digital network.

Second, as more corporate data is being routed outside companies' premises, use of the telephone system for data carriage has increased. Therefore, a symbiosis has developed between computing and communicating, and it becomes more logical and economical to combine voice and data into one standardized network — an ISDN.

"There has never been a significant need for data terminal manufacturers to participate in those kinds of standards. They've had to think about RS-232, basically, and that's it," Rudov said. "Now a lot of data terminal manufacturers are starting to incorporate modems inside of their terminals, and the funny thing about that is ISDN will eliminate modems."

According to the report, the significance of this ignorance is that data terminals will be viewed second to telephones as the ubiquitous gateway to ISDN.

Rudov believes this situation may prompt foreign manufacturers to flood U.S. markets with ISDN-compatible terminals, as these manufacturers have been heavily involved in the ISDN standardization process.

The ISDN study is priced at \$4,950.

*Venture Development,  
One Washington St., Wellesley, Mass. 02181.*



# Now, a major advancement in Net/One local area networking. Lower cost.

Our new VLSI chip set has allowed us to do with one printed circuit board what we used to do in three. The result is a new Network Interface Unit, the NIU 150, that's half the cost of its predecessor, the NIU-1. In areas where a smaller number of either broadband or baseband connections are required, the pared-down NIU 150 brings per-port connection costs well below \$500.

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UFO/COBOL is the perfect answer to your procedural on-line programming needs. For the first time, all your COBOL programmers can now develop CICS applications without learning one word of new code. No longer will the lack of specialized Command Level programmers be a barrier to satisfying the growing demand for more on-line applications. Now your present staff can put their ANSI COBOL programming skills to work cutting your backlog of on-line applications...doing it faster, more efficiently, more automatically than ever before.

Without modifying your on-line environment or operating system, UFO/COBOL takes standard COBOL commands, and automatically translates them using a unique COBOL compiler into the language necessary for CICS program execution. Your ability to utilize the substantial benefits of the on-line

or modify screens without writing one line of code. You design the screen simply by positioning fields where you desire. Then COBOL data descriptions are *automatically* generated from the screen.

## **UFO/COBOL makes prototyping easy.**

By quickly defining a sequence of screens, you can prototype the final system...testing and modifying each screen before writing code. You can develop applications interactively with end-users, gaining all the efficiencies of their direct involvement.

## **Developed by Oxford...#1 in CICS application development.**

UFO/COBOL is a development of Oxford Software Corporation, the leading independent supplier of on-line application development software. With more than 1500 installations of UFO...the premier, 4th generation non-procedural approach to application development...no one knows more about the CICS application development environment than Oxford.

If you'd like to learn how you can dramatically add to your on-line development capabilities, using your present programming skills, call in the leader. Call Oxford today at (800) 631-1615.

**An example of UFO/COBOL commands.**

<u>In COBOL</u>	<u>In Command level</u>	<u>In UFO/COBOL</u>
DISPLAY (SCREEN-NAME)	EXEC CICS SEND MAP ('XDFHCMA') MAPONLY ERASE END-EXEC.	DISPLAY (SCREEN-NAME)
READ (FILE-NAME)	EXEC CICS READ DATASET ('FILE- NAME') INTO (FILE- NAME) RIDFLD (KEYNUM) END- EXEC.	READ (FILE-NAME)

environment increases enormously, while your programmers continue to write in a familiar and natural way.

## **UFO/COBOL defines CICS 3270 screens on-line.**

In addition to extending the capabilities of your programmers, you'll find that UFO/COBOL is a powerful new method to speed-up the CICS application process dramatically. Built into UFO/COBOL is an interactive screen painting facility that lets you design CICS 3270 screens on-line. UFO/PAINT allows you to build



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CW 1/23

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## COMMUNICATIONS

## Wang Labs introduces DVX upgrade

LOWELL, Mass. — Wang Laboratories, Inc. has announced the DVX Message Waiting Unit, DVX Feature Package 3.8 software and DVX networking capabilities — enhancements to the company's digital voice exchange (DVX), automated voice communications system.

The message-waiting unit, which sits under the user's telephone, notifies a person called by lighting a message-waiting lamp when a message is deposited in a DVX user's audio mailbox, either internally through DVX or externally by an outside caller, the vendor said. The price is \$225.

DVX networking capabilities allow users to access all DVX functions in exchanging messages with individuals on other DVX systems. Software for the first phase of networking is \$1,000/node plus a \$10/mo license fee for each node.

DVX Feature Package 3.8 software provides users with a facility called Informational Services that allows information to be dispersed by phone to a large audience, regardless of whether or not the inquiry originates with a DVX or non-DVX user, the vendor said.

The information storage capacity of Informational Services consists of nine of the vendor's Voicemail audio mailboxes that hold up to 60 six-minute messages each. All that is needed to access the messages is a standard Touch-Tone-type telephone set, according to the vendor.

The product provides the following capabilities: message confirmation, mailbox scan, on-line directory, play positioning, password modification, 12-digit outbound calling and message purge. The price is \$14,000 plus a \$140/mo license fee.

Wang, One Industrial Ave., Lowell, Mass. 01851.

## NCR Comten announces 4034 console

ST. PAUL, Minn. — NCR Comten, Inc. has announced the 4034 operator console for the company's 3690 data communications system.

The 4034 is available in two models. Model A-5 consists of an 80-char. by 24-line CRT with a detached keyboard and an 80-col., dot-matrix, bi-

directional impact printer with stand and paper catcher. The printer attaches directly to the CRT, the vendor said. Model B5 comes without a printer and stand.

From the console, the network operator can control any local or remote communications processor in the network, reconfigure the relationship between lines and subchannels without regenerating the system software and execute network-control-program (NCP) line swaps.

The operator can also invoke utilities, traces and commands from the local console for remote nodes in an access-control-field/NCP network, the vendor said. The A-5 model costs \$3,650. The B5 model is priced at \$1,645.

NCR Comten, 2700 Snelling Ave. N., St. Paul, Minn. 55113.

## Workstation out from Ambi

STAMFORD, Conn. — Ambi Corp. has announced an integrated voice and data executive workstation designed as a desktop, two-line, integrated voice and data private branch exchange (PBX).

The Ambiset reportedly combines telephone features with personal processing capabilities that can be upgraded to include compatibility with IBM and with computers using the Microsoft, Inc. MS-DOS operating system.

The unit is said to look like a business telephone with the addition of a typewriter keyboard and an 80-col.

by eight-line display screen. It reportedly can be installed by plugging in to a standard analog RJ11 telephone jack for use on rotary and pulse lines.

It is said to feature 128K bytes of random-access memory (RAM) for general messaging functions; 64K bytes of battery-backed Cmos RAM to support a 250-entry, fast-dial directory; and 45K bytes of erasable programmable read-only memory that is set aside for special function keys.

Those special function "learn" keys are designed to allow the user to teach the system how to handle special communications needs, the vendor said.

The suggested retail price is \$2,495.

Ambi, 1033 Washington Blvd., Stamford, Conn. 06901.

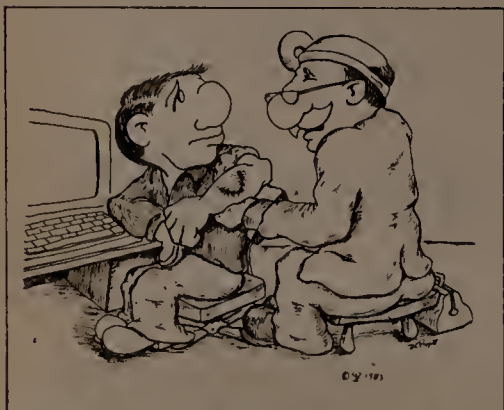
# PREVENT BAD

IT SPREADS.  
CORRUPTS.  
ERODES.  
DESTROYS INTEGRITY.

Bad data is really bad news. Because it's impossible to get good information from bad data. And once bad data gets into a system, there is no cure. The bad simply gets worse.

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Hmmm ... Worst data byte I've seen in a long time.



## COMMUNICATIONS

COMMUNICATIONS  
CONTROLLERS

## AMDAHL CORP.

## 4470 Network Concentrator

Amdahl Corp. has announced the 4470 Network Concentrator, a packet-switching product which allows users to communicate with private and public X.25 data networks and computer systems using the industry-standard IBM Systems Network Architecture (SNA). It is an extension of the company's 4400 series of communications products.

The product features single or multiple X.25 links to public data networks. It supports IBM 3274 and 3276 control units and associated printers and keyboard displays with

up to seven Synchronous Data Link Control (SDLC) lines, 16 SDLC 3270-type clusters and 128 SNA logical units, the vendor said. The price is \$12,500.

*Amdahl, 1250 E. Arques Ave., P.O. Box 470, Sunnyvale, Calif. 94086.*

VOICE/DATA  
COMMUNICATIONSGTE BUSINESS  
COMMUNICATION SYSTEMS,  
INC.

## Omni SI

GTE Business Communication Systems, Inc. has announced the Omni SI office communication system, an expansion of the company's private

branch exchanges.

The system can handle up to 256 voice and data ports and is designed to serve businesses with between 30 and 200 employees, the vendor said.

The product utilizes dual-bus architecture — a pulse-code-modulation bus for voice and a packet bus for data. The product is available with specially designed packages for specific industries such as lodging and health care, the vendor said. The price range is \$600 to \$700 per line.

*GTE Business Communication Systems, 12502 Sunrise Valley Drive, Reston, Va. 22090.*

SURE COMMUNICATIONS, INC.  
Solution III Telemanager

Sure Communications, Inc. has introduced the Solution III Teleman-

ager, an automated, on-site telemanagement system designed to assist organizations with up to 3,000 extensions.

The system features a microcomputer, hard disk storage and a CRT and utilizes Digital Equipment Corp. hardware, the vendor said.

The product was designed to function in a regular office environment rather than a computer room and is compatible with almost every telephone system and telephone switch, according to the vendor. The price ranges from \$40,000 to \$45,000.

*Sure Communications, 257 Park Ave. S., New York, N.Y. 10010.*

CP NATIONAL  
Telepol II

CP National's Software and Systems Division has introduced Telepol II, a telephone-traffic data storage system which allows polling of call records from multiple sites for processing on a central IBM mainframe.

The system collects telephone call records from almost any computerized telephone system and records them onto 5¼-in. flexible disks for later polling. It uses the IBM-compatible 3780 Binary Synchronous Communications protocol for polling, with a transmission speed of 1,200 bit/sec, the vendor said.

Processing on an IBM mainframe can be accomplished with the company's Telemanagement Software Systems. The price is \$4,900.

*CP National, 242 Old New Brunswick Road, Piscataway, N.J. 08854.*

MULTIPLEXERS/  
MODEMSTIMEX COMPUTER CORP.  
TS2050

Timex Computer Corp. has announced the Timex Sinclair (TS) 2050 telecommunications modem, which allows users of the vendor's computers to use their telephones for services such as electronic mail and home banking and shipping.

The modem, when used with the TS1500 computer, provides an interactive system that can be used to communicate with other computers. The TS2050 is compatible with all Timex Sinclair personal computers and peripherals. It includes a Timex Smart Terminal I software cassette, which enables users to access computer subscription services and computer data bases immediately.

It also comes with modular phone cables and jacks for connection to standard or electronic telephones, a 9V ac adapter and a step-by-step instruction manual.

The TS2050 Telecommunications Modem has a retail price of \$119.95.

*Timex Computer, P.O. Box 2655, Waterbury, Conn. 06725.*

GENERAL DATACOMM  
INDUSTRIES, INC.  
4800S; 212SS

General Datacomm Industries, Inc. has introduced two modems, the 4800S and the 212SS Super Saver.

The 4800S is a switched network, key-featured, single card modem. It features asynchronous or synchronous operation with autodialing and autoselect request-to-send, clear-to-send delay.

Continued on page 59

**FACETS.** Preventing bad data begins with stable database designs. This leading edge design tool assists in all phases of database projects, from information analysis to finished design.

**KEY/MASTER.** From the moment you capture data, this widely used on-line data entry system helps you screen bad from good — to assure initial and ongoing accuracy.

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# TSI International

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187 Danbury Road Wilton, Connecticut 06897

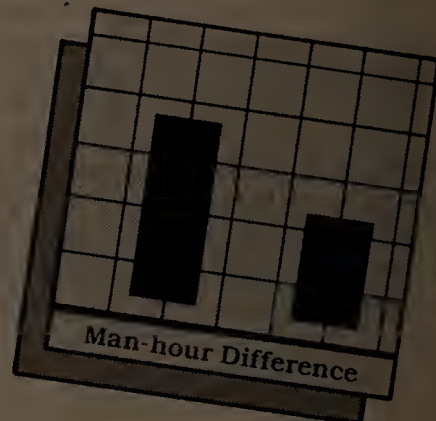




# The Goal News

For VSAM Dataset Management

## AUTOMATIC BEATS MANUAL



### VSAMAID/XP<sup>T.M.</sup> Slashes Man-Hours From VSAM Management

Goal Systems International has developed a product called VSAMAID/XP which makes virtually any systems person a VSAM expert. Data processing managers everywhere know that when VSAM is running, it is necessary to continually tune the system in order to keep response times within acceptable limits. Before VSAMAID/XP, that job required highly specialized technicians working full time to manually keep disk utilization and CPU overhead to a minimum. VSAMAID/XP changes all that. The system eliminates the inefficiencies of VSAM and automates the tuning of VSAM files.

A historical file of all VSAM data sets in DOS/VSE, OS/VS1 and MVS is created from VSAM performance data. Then, as required, vital statistics are generated through VSAMAID/XP's Recommendations Processor, Device Capacity Processor or History File Trends Processor. Working through mathematical algorithms, VSAMAID/XP will tell you exactly how to best tune your system for your VSAM files. If you wish to see how altering various factors will change your efficiency, there is a modeling system built into VSAMAID/XP for that purpose.

### Product Of New Software Technology

Calling on its highly skilled software development team, Goal Systems International began research on VSAMAID/XP in mid-1981. The system required the experience of telecommunications software experts, mathematicians, and skilled programmers to produce. "The challenge," a spokesman said, "was to make the system do all the work, yet allow the user to maintain control over a wide variety of VSAM data."

Some of the VSAM factors VSAMAID/XP handles include variable selection for key sequenced files, the use of free-space values, VSAM default

parameters, allocation of virtual storage, records organization, most common access patterns, and more.

VSAMAID/XP makes its recommendations in the IDCAMS DEFINE format to simplify redefining each file.

### Over 200 Systems On Trial In First Three Months

Named as the most popular product in the history of Goal Systems, VSAMAID/XP has been shipped to more than 200 sites for trial in its first three months of availability.

### Works With FAVER/XP<sup>®</sup> For Total VSAM Management

Goal Systems International has revealed that they have an interface between the FAVER/XP Backup & Restore system and the VSAMAID/XP system which creates the only complete VSAM dataset management system available today.

During backup, the FAVER/XP special interface creates a historical file, which is used by VSAMAID/XP to create a "recommendations" report. The report tells resource managers how to manage VSAM datasets for optimum space allocation and resource utilization. VSAMAID/XP recommendations may then be implemented with simple commands through the FAVER/XP Auto-Delete/Define facility.

"It seems like all we have to do is mention VSAM and people are eager to listen," said Denny Yost, Sales Manager for the XP Product Line. "But then, installations are only now realizing that a great deal of manual labor is spent keeping VSAM files tuned. VSAMAID/XP can be installed in a few minutes; it will make its first recommendations after just one week of gathering performance data. People quickly become delighted with this product."

VSAMAID/XP and FAVER/XP are great news for installations with VSAM. They are two of the Extended Productivity Systems from Goal Systems International. Both are available for a free trial. Call Goal Systems toll free today.

800-848-4640 (In Ohio, 800-628-4640)



**Goal  
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Software Solutions

Goal Systems International Inc.  
5455 N. High Street  
Columbus, Ohio 43214-1193  
Phone (614) 888-1775



## COMMUNICATIONS

**Continued from page 57**

The 4800S is available in a compact stand-alone enclosure or high-density rack-mount shelf that houses 16 modems.

The vendor's other new product is the 212SS Super Saver modem, an asynchronous, full-duplex modem designed for switched network operation. It is compatible with Bell 103, 113 and 212-type modems and allows any RS-232C-compatible asynchronous terminal to communicate with any other computer and a Bell 212-compatible modem.

According to the vendor, the 212SS has a digital adaptive equalizer that provides greater tolerance to telephone line impairments often found on the switched network. The list price of the 4800S is \$1,645; the 212SS costs \$435.

*General Datacomm Industries, One Kennedy Ave., Danbury, Conn. 06810.*

**C-COR ELECTRONICS, INC.****Model 7140 modem**

C-Cor Electronics, Inc. has announced the Model 7140 Synchronous Data Modem which operates at speeds up to 9.6K bit/sec.

The product is an extension of the company's Cableport 7100 Series Narrowband Modems for two-way broadband coaxial network applications.

The Model 7120 Voice Modem offers audio response up to 10 kHz for off-premises extension and bypass telephone applications. The Model 7130 provides medium-speed data transmission up to 19.2K bit/sec. All models operate in simplex, half-duplex and full-duplex modes, the vendor said. The prices are \$675 for the 7120 Voice Modem, \$625 for the 7130 Asynchronous Modem and \$650 for the 7140 Synchronous Data Modem.

*C-Cor Electronics, 60 Decibel Road, State College, Pa. 16801.*

**NOVATION, INC.****Access 1-2-3 package**

Novation, Inc. has bundled its PC1200B smart modem with Crosstalk XVI from Microstuf, Inc., to create a data

communications package for the IBM Personal Computer, Personal Computer XT and compatibles.

The system includes a modem, software and documentation and is part of Novation's communications system called Access 1-2-3. The modem is capable of full-duplex operation at either 300 or 1,200 bit/sec and can perform an automatic self-test and receiver alignment at power-on and can be put

into analog or digital loop-back test modes, the vendor said.

The software package for the IBM Personal Computer is an intelligent terminal employing all the features of the modem to accomplish autodial, autologon and autoanswer and allows for disk-to-disk data transfer, according to the vendor. The price of the package is \$595.

*Novation, 20409 Prairie St., Chatsworth, Calif. 91311.*

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**TOLL FREE 1-800-437-7468**





## COMMUNICATIONS

### TEST EQUIPMENT

#### B & B ELECTRONICS Mini Tester Model 232MT

B & B Electronics has introduced the Mini Tester Model 232MT, a smaller version of the company's RS-232 Tester.

The Mini Tester features one male and one female connector for insertion into any RS-232 interface. Twenty-five pins are connected straight through, with seven lines connected to LEDs, which indicate the status of transmission data, receive data, request to send, clear to send, data set ready, carrier detect and data terminal ready, the vendor said.

The product measures 2¼ by 2¼ by ¾ in. and is available with two-color LED. Red and green LED can indicate a low, high or open condition.

The Mini Tester is priced at \$49.95; with two-color LED, it costs \$59.95.

*B & B Electronics, Box 475, Mendota, Ill. 61342.*

#### HEWLETT-PACKARD CO. HP 4945A Tims

Hewlett-Packard Co. has announced a transmission impairment measuring set (Tims), designed for problem isolation on high-speed, data- and voice-grade circuits.

The HP 4945A Tims reportedly combines a comprehensive measurement set, a wideband frequency range, convenient display formats, programmability and hard-copy capability through multiple I/O and remote testing capability.

The HP master/slave technique is said to increase productivity with one-person, two-way testing by allowing the local master set to control a remote slave set with automatic control and collection of slave functions and measurements.

The company offers delivery in eight to 12 weeks after receipt of order. The HP 4945A Tims is priced at \$14,950.

*Hewlett-Packard, 1820 Embarcadero Road, Palo Alto, Calif. 94303.*

#### DOLCH LOGIC INSTRUMENTS, INC. SIP 80E

Dolch Logic Instruments, Inc. has introduced a serial interface probe that configures the front end of a logic analyzer for analysis of asynchronous V.24/V.28 RS-232 serial data.

The SIP 80E probe is available for use with the company's 4850A and 64300 logic analyzers. The probe connects into a serial communications link through standard RS-232C, 25-pin D connectors, according to the vendor.

Features of the probe in-

clude capabilities to monitor a serial link's send and receive lines simultaneously or individually and to transmit any selectable Ascii characters on those lines.

It accommodates data rates to 19.2K bit/sec, has a built-in clock burst generator for triggering on the first incoming character and maintains the timing relationships on the logic analyzer's screen by writing blank characters for unchanging and in-

valid characters. The price is \$1,300.

*Dolch Logic Instruments, 3052 Orchard Drive, San Jose, Calif. 95134.*

### AUXILIARY EQUIPMENT

#### SATELLITE SEMINARS Tele-Update '84

Satellite Seminars has an-

nounced a teleconference designed to inform major telecommunications users of current regulatory and technological changes and of their potential impact on rates and service options.

Scheduled for Feb. 9, Tele-Update '84 will be televised from Biznet, the U.S. Chamber of Commerce facility in Washington, D.C.

According to the vendor, key individuals, agencies and regulatory and technological

developments will be featured in a four-hour program, which will also include background and identification of issues, discussion of bills still before Congress, court settlement provisions and other topics of interest to telecommunications users and associations.

The program will be broadcast to at least 25 downlink facilities at universities, hotels and other meeting sites in major metropoli-

**THE QVT-108 TERMINAL**

Power, versatility and superior ergonomics



## COMMUNICATIONS

tan areas across the country. The registration fee for the teleconference is \$75 in advance or \$85 at the door.

**Satellite Seminars, Box 356, Salt Lake City, Utah 84110.**

### DIGITAL MICROSYSTEMS, INC. Self-study course

Digital Microsystems, Inc. has added a self-study course for its Digital Research, Inc.

CP/M, local-area network, manufacturing resource planning (MRP) system.

The system includes five workstations, 46M bytes of hard disk storage and networking and office automation software. The office automation software includes Perfect Software, Inc.'s Perfect Writer, Perfect Calc, Perfect Speller, Perfect Filer and an electronic mail system.

The MRP software in-

cludes material processing, sales order management, master scheduling, inventory control, work order processing, purchasing, inventory, shop floor control and job costing functions. The self-study course is a 14-unit course developed by Bourke-Arnold Enterprises, manufacturing training consultants.

In addition to the self-study materials, Digital Microsystems provides its cus-

tomers with a one-day class concerning the office automation software and a one-day training session for the networking and MRP software. An MRP system costs \$39,900.

**Digital Microsystems, 1755 Embarcadero, Oakland, Calif. 94606.**

### HADAX PRODUCTS, INC. PC-Mate

Hadax Products, Inc. has

announced the PC-Mate series of data switches. The series includes two push-button switches, each with an input panel connector, plus two output connectors mounted on 6-ft-long ribbon cables.

One switch has a 36-pin/32-lead switched interface for parallel printers, and one has a 24-lead switched D-25/RS-232 interface for serial printers, the vendor said. The price is \$99.

**Hadax Products, 79 Hazel St., Glen Cove, N.Y. 11542.**

### COMPUTER APPLICATION SERVICES, INC. Electronic Mail System

Computer Application Services, Inc. has introduced Electronic Mail System (EMS), a device that reportedly connects IBM mainframe computers running on either OS or DOS directly into Western Union Corp.'s Easylink. Easylink, in turn, supports such sites as TWX, Telex I and Worldwide Telex.

Easylink features automatic dialing and sign-on, transmittal of messages from EMS, inquiry of messages from Western Union and the distribution of Easylink messages to EMS mainframe users at IBM CICS terminals.

Typical users of the Easylink connection of EMS, according to the vendor, are purchasing departments who use it to send orders and sales departments who use it to send shipping confirmations.

EMS is a full-featured electronic mail system for IBM 3270 terminal networks running CICS. The system includes message forwarding, full screen message editing, route lists, tickler files, to-do lists and calendaring.

EMS is offered for \$8,900 for the OS version and \$7,500 for the DOS version. There is currently no separate charge for the Easylink connection.

**Computer Application Services, Suite 210, 12535 Seal Beach Blvd., Seal Beach, Calif. 90740.**

### GILTRONIX, INC. 9000 series DCU; Selecto-Switch

Giltronix, Inc. has announced the 9000 series Distributed Control Unit (DCU), an automatic switching device for computer interfacing.

The DCU allows communications to be established between any device connected to one of the DCU ports. The product's automatic switching unit allows keyboard-controlled selection of peripherals and computer systems.

Prices range from \$509 to \$847.

The company has also introduced a Selecto-Switch system for the IBM Personal

Continued on page 63

# QVT-108

## The Great Emulator.

Qume's new QVT108™ VDU terminal emulates Televideo models 925\*, 920\* and 912\* making it a perfect fit for operators familiar with any of these terminals. It more than matches the Televideo 925 with sophisticated features like 11 function keys, 22 user-programmable functions, 12 editing functions, 25th status line, a menu, set-up mode, two full pages of screen memory, and many other standard features.

The QVT108 takes up minimal workspace, and operators will love its ergonomic design: a non-glare green or amber screen with full tilt and swivel, a big 9 x 12 dot matrix for each character to minimize eye-strain, and a detached, low-profile, adjustable-tilt keyboard.

Engineered and built to Qume's exceptional reliability standards, the QVT108 is backed by our six-month warranty and a nationwide service network. Features include:

- Local or duplex editing • 11 function keys (22 user-programmable functions total) • Bidirectional auxiliary port
- Two pages of screen memory • Line drawing graphics character set • Tilt/swivel, non-glare, green screen (amber optional) • 9 x 12 character cell resolution, 7 x 9 character size • Detached, low-profile, adjustable-tilt typewriter style keyboard with numeric pad • 24 lines x 80 characters with a 25th status (defeatable)/menu/user-programmable line • Screen-saver time out (an inactive terminal shuts off its screen after fifteen minutes with no screen data loss) • 6 video attributes: blink, blank, normal video, reverse video, underline, and half-intensity • Televideo model 925 code compatible
- Emulations: Televideo 925 and 912/920 • Self test
- Time of day • Monitor mode • Switching power supply (efficient operation and low power consumption)

#### Display Format

24 lines x 80 characters

25th status/set-up/user-programmable line

#### Character Formation

7 x 9 matrix in a 9 x 12 cell

#### Displayed Character Set

96 ASCII characters, 32 control character symbols, and 15 graphic symbols

#### Editing (Local and Duplex)

Cursor: up, down, left, right, home. Character/line insert and delete, erase to end of line/page, tab, back tab, alternate page.

#### Communications Interface

EIA RS232-C, optional current loop (active or passive)

#### Communications Protocols

DTR and/or XON/XOFF

#### Communications Modes

Full or half duplex, block line or block page; 7 or 8 data bits

#### Baud Rates

16 selections from 50 to 19.2K

#### Auxiliary Port

Bidirectional. Modes: parallel, transparent, screen copy

#### EIA RS232-C

#### Screen

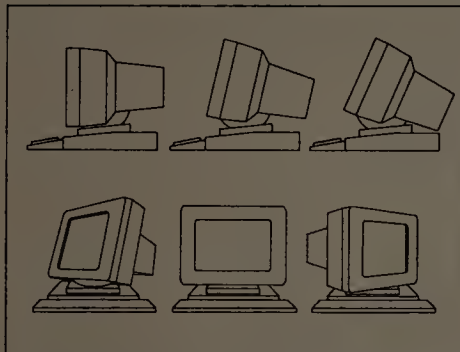
Tilt/swivel, 12-inch diagonal, non-glare green (optional non-glare amber, 14-inch screen)

#### Character Attributes

Blink, blank, normal video, reverse video, underline, half intensity

#### Keyboard

Detached, adjustable-tilt, low-profile (home row 30mm from work surface), alphanumeric keys, 14-key numeric



pad, 11 function keys (22 user-programmable functions with shift), defeatable autorepeat and key click, 12 editing keys. Print, set-up, and scroll lock keys.

#### Fields

Protected and unprotected

#### Parity

Odd, even, mark, space, none

#### Screen-Saver

Screen shuts off after 15 minutes of inactivity without data loss (defeatable)

#### Screen Memory

Two pages

#### Set-Up Mode

Menu-style preserved in non-volatile memory (lithium battery with 7-year life)

#### Power Supply

Switching-type (low power consumption)

#### Options

Amber screen

14" screen

20mA current loop

Special character sets

#### Command Set

Televideo 925 compatible

#### Emulations

Televideo 925

Televideo 912/920

#### Power Requirements

95-125 VAC

200-264 VAC

50/60Hz, 30W

#### Dimensions

Keyboard 15"(H) x 18"(W) x 8"(D)

Display 14"(H) x 13"(W) x 12"(D)

#### Weight

Keyboard 3 lbs., display 19 lbs.

#### Command Codes

Address cursor, row, column

Address cursor, page, row, column

Auto page on

Auto page off

Back tab

Bell

Block mode on

Transparent print on

Transparent print off

Carriage return

Character delete

Character insert

Clear all column tabs

Clear all to half intensity

blank characters

ESC = rc

ESC - prc

ESC v

ESC w

ESC i

CTRL/G

ESC B

ESC'

ESC a

CTRL/M

ESC W

ESC Q

ESC 3

ESC ,

Clear all to nulls

Clear column tab

Clear unprotected to blank

characters

Clear unprotected to nulls

Conversation mode

Copy print mode on - aux port

Copy print mode off - aux port

Cursor down

Cursor home

Cursor left

Cursor right

Cursor up

Disable bidirectional port

Disable XON/XOFF control

Display status line

Display user line

Duplex edit on

Enable bidirectional port

Enable XON/XOFF control

Erase to EOL with blanks

Erase to EOP with blanks

Field tab

Keyclick off

Keyclick on

Line delete

Linefeed

Line insert

Load user line

Local edit on

Lock keyboard

Monitor mode off

Monitor mode on

Next page

Newline

Normal video

Previous page

Print page

Protect mode off

Protect mode on

Read cursor, page, row, column

Read cursor, row, column

Reverse video

Reverse linefeed

Screen, blank

Screen, normal

Select termination character

Send line all

Send line unprotected only

Send message all

Send message unprotected

Send page all

Send page unprotected only

Set column tab

Set cursor attributes

Set printer termination character

Set video attribute

Tab

Unlock keyboard

Half intensity off

Half intensity on

Load time (in status line)

Read time

Special graphics off

Special graphics on

ESC \*

ESC 2

ESC ; or CTRL Z or ESC +

ESC :

ESC C

ESC @

ESC A

CTRL/V

CTRL/A

CTRL/H

CTRL/L

CTRL/K

CTRL/T

CTRL/N

ESC h

ESC g

ESC i

CTRL/R

CTRL/O

ESC T

ESC Y

ESC i

ESC ,

ESC R

CTRL/\_

ESC d

ESC J

ESC P

ESC '

ESC &

ESC /

ESC ?

ESC b

ESC j

ESC o

ESC n

ESC x4(n)

ESC 6

ESC 4

ESC s

ESC S

ESC 7

ESC 5

ESC i

ESC (n)

ESC p(n)

ESC G(n)

CTRL/i

ESC "

ESC (

ESC )

ESC sp 1 n1n2n3n4n5

ESC sp 2

ESC %

ESC %

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### SPERRY PERSONAL COMPUTER SPECIFICATIONS

OPERATING SYSTEM	KEYBOARD
MS DOS Version 1.25 or 2.0 with G.W. BASIC	84 keys, 6 ft. cord
MICRO-PROCESSOR	AUXILIARY MEMORY
High-Speed 16-bit 8088	Up to two internal 5 1/4" diskettes
DISPLAY SCREENS	10MB internal fixed disk when configured with single diskette.
High Definition monochrome display.	USER MEMORY
High resolution color display.	Standard 128K bytes, expandable to 640K
IBM compatible graphics.	DIAGNOSTICS
COMMUNICATIONS	Power-on self test
Built-in Asynchronous	CLOCK
	Time-of-day with battery back-up

 **SPERRY**



**The Sperry PC.**  
**What the personal computer**  
**should have been in the first place.**



## COMMUNICATIONS

Continued from page 61

Computer, which eliminates the need for plugging and unplugging of cables connecting such peripherals as printers, plotters, terminals and modems to various computers, the vendor said. The system is available in more than 10 models. Prices range from \$119 to \$299.

*Giltronix, 3780 Fabian Way, Palo Alto, Calif. 94303.*

#### **XYPLEX, INC.** **XP-UN32-A**

Xyplex, Inc. has announced the XP-UN32-A, a host interface unit for the company's networking system.

The product is a 32-port version of the vendor's Digital Equipment Corp. Unibus host interface unit. The Xyplex system converts the terminal subsystem of DEC's VAX-11 mini-computer from a character-at-a-time system to an intelligent message processor. It provides the VAX/VMS system with equivalent capabilities of the IBM 3270 terminal family, the vendor said.

The unit provides a single-board interface for up to 32 or 64 ports via a single coaxial cable into a VAX computer system. The system supports up to 255 host interface units and cluster controllers connected to a single coaxial cable, which can be up to six miles in length, the vendor said. Unit price is \$5,700.

*Xyplex, 100 Domino Drive, Concord, Mass. 01742*

#### **ATTACHMATE CORP.** **3270 Coax Interface**

Attachmate Corp. has announced the 3270 Coax Interface, said to allow IBM Personal Computers to function as new IBM 3270 Personal Computers with more features and enhanced performance.

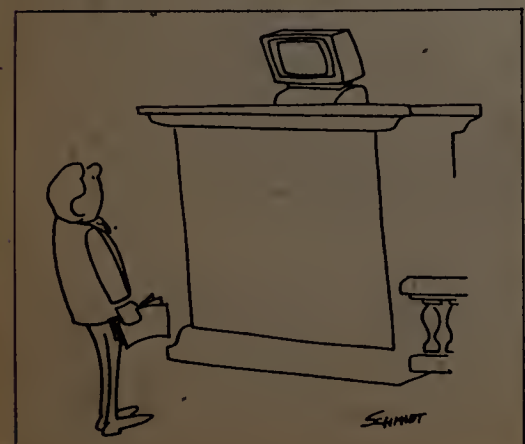
The 3270 Coax Interface adds Personal Computer-to-mainframe windows to IBM Personal Computers and their counterparts. When connected to mainframes, Personal Computers with the Attachmate 3270 can be transformed into as many as four terminals, the vendor said. The product can function with up to seven distinct programs, displaying each one in a separate screen window.

A lock and key secure access to the mainframe, the vendor said. A Personal Computer memory is not used, and 256K-byte capacity is an option on the board, the vendor said. The Attachmate 3270 Coax Interface costs \$910.

*Attachmate, 3241 118th S.E., Bellevue, Wash. 98005.*

#### **K-SYSTEMS, INC.** **KTL-100**

K-Systems, Inc. has introduced the KTL-100, a printed-circuit module that emulates Digital Equipment Corp.'s VT100 CRT terminal.



A dual-height board provides two full-duplex, serial asynchronous channels for keyboard and computer interface and an RS170 composite video output for a monitor. Installed into a standard DEC backplane or equivalent power source, the module implements the vendor's Advanced Video Option, including 80 and 132 columns, nonvolatile setup parameters and all display attributes, the vendor said. Its unit price is \$600.

*K-Systems, 3902 Lilac, Las Cruces, N.M. 88005.*

#### **TYMNET, INC.** **Asynchronous Terminal Concentrator**

Tymnet, Inc. has announced the Asynchronous Terminal Concentrator (ATC) for users to access its pub-

lic and private packet data communications networks. The product reportedly serves up to eight simultaneous users.

The ATC measures 12 in. wide by 3 in. high by 12 in. deep. It performs automatic, independent speed detection in a range from 110 to 9,600 bit/sec. Integrated into the ATC is a set of hardware diagnostics, including communications and remote reporting software for both terminal and network connections, the vendor said. The price is \$3,300.

*Tymnet, 2710 Orchard Pkwy., San Jose, Calif. 95134.*

#### **DATA COMMUNICATIONS BROKERS, INC.** **"Modem Options"**

Data Communications Brokers,

Inc. has introduced a videotape to be included in its training series.

"Modem Options" deals with the variety of modems on the market. The color videotape demonstrates what each modem option does and how it is used in various applications. Some modem options include constant carrier, switch carrier, receiver sensitivity level, equalization, automatic vs. manual answering and leased line vs. dial-up, the vendor said.

The videotape is available in ½-in. Betamax or VHS and ¾-in. U-Matic formats. Two-week rental is \$40 for ½-in. and \$50 for ¾-in. tapes. Tapes may also be purchased for \$150 (½-in.) or \$180 (¾-in.).

*Data Communications Brokers, 3000 Research Road, Champaign, Ill. 61821.*

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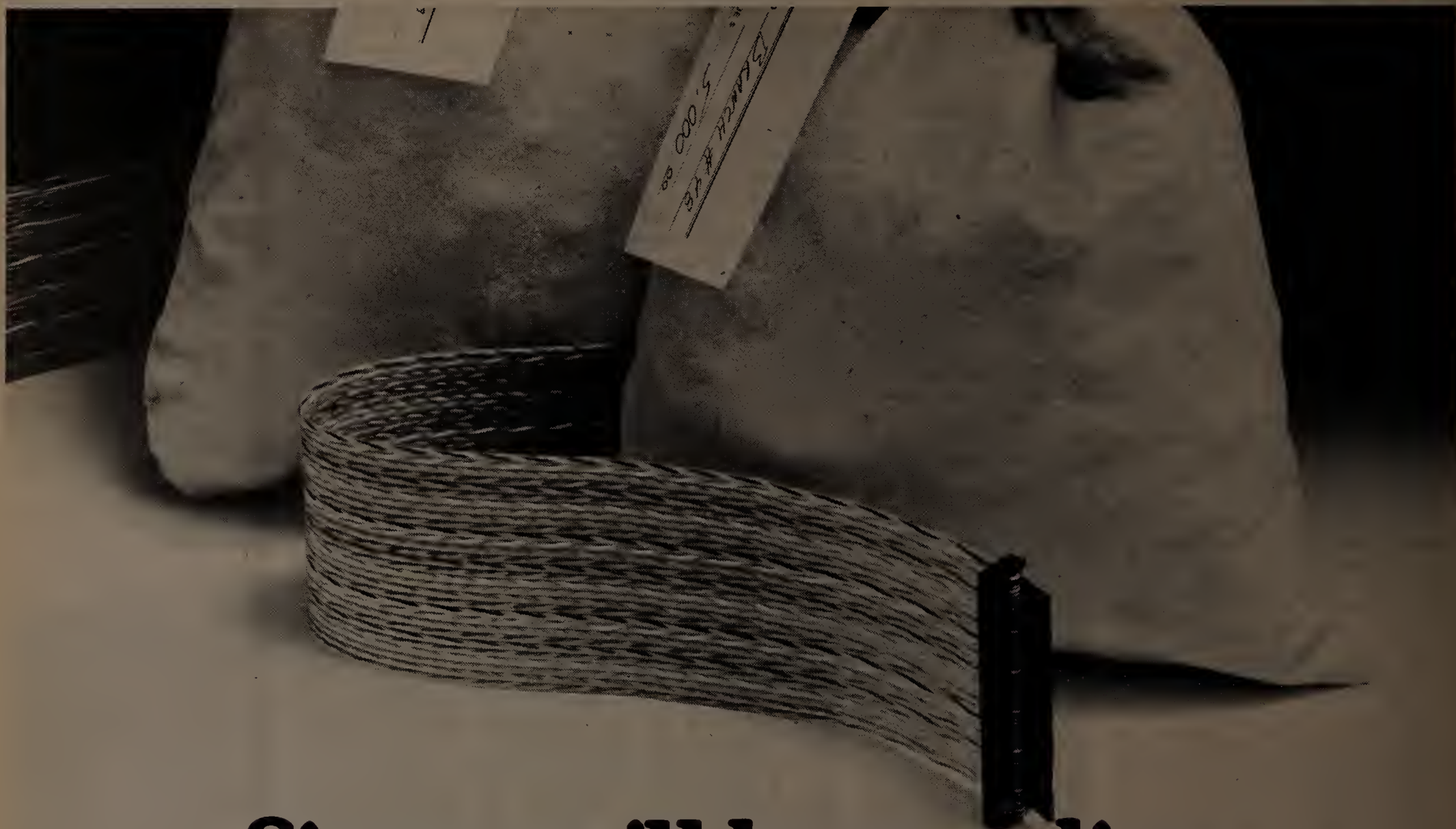
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- *CATV networks*
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- *voice/data network integration*

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If you spend — or are planning to spend — millions on data communications networks, then you can't afford to miss the February 27th special report on Data Communications Networks in **Computerworld**.



## COMPUTERWORLD

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Cullinet

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*Cullinet's*

*New*

*Software*

*Products*





*John Cullinane founded Cullinet Software in 1968, with the, then revolutionary, idea of specializing in computer software products. Since that time, Cullinet has become the most successful and respected software products company in the world and the first such company to be listed on the New York Stock Exchange. John has always been committed to the concept of a user driven company, where success is measured by the success of the users of Cullinet products.*

*As a tribute to Cullinet's success, John was elected CEO of the Year in the software industry in 1982. He is a graduate and Trustee of Northeastern University and Chairman of the Advisory Committee of its College of Computer Science.*

“On April 19, 1983 Cullinet made a number of significant new product announcements. Since that date, these products have generated much interest and related discussion in the industry, in the trade press and at technical forums. The purpose of this brochure is to put these products in perspective for the reader. At the same time, the brochure highlights some of the key members of Cullinet's outstanding technical staff responsible for the design and development of these products. During the past decade, with products and people like these, Cullinet has continually achieved significant advances in the state of the art of software technology.”



# What is

## IDMS/R?



Ed Savoie is Cullinet's Manager of Database System Software development. He joined Cullinet five years ago and has made important contributions to the development of IDMS. Today, Ed is responsible for the development of IDMS/R, the Integrated Data Dictionary and IDMS-DC. Ed is a graduate of Harvard University where he majored in Psychology.



Thomas Nelson, Director of Software Design and Integration, has contributed to most of the important technical accomplishments of Cullinet Software products for ten years, these include the IDMS-Central Version, Distributed Database System and the Universal Communication Facility. He is a key figure in the design of both IDMS/R and the Information Database. Tom is a graduate of Massachusetts Institute of Technology.

IDMS/R is not only a relational database management system, but a particularly powerful one. IDMS was made relational by removing all pointers and allowing the user to define data as tables and providing the traditional relational operators such as selects, projects and joins. In other words, IDMS/R will more than satisfy the relational purist. The major benefit of any relational DBMS is the capacity to develop applications faster because the developer does not have to be concerned with the database design. IDMS/R provides this and much more.

For example, the Automatic Systems Facility (ASF) of IDMS/R is a major advance over fourth generation languages. ASF is so comprehensive and easy to use that all a user need do to develop an application is to define a relational record. Then the Automatic Systems Facility dynamically generates all necessary supporting structures including data definitions, screen formats, application processing logic, and documentation. In other words, the developer can witness the application being produced, literally, in seconds. Thus IDMS/R is the perfect system for the end user.

But suppose when you build a complex, high volume production application with IDMS/R, you desire high performance. Typically 5% of the data relationships (joins) in any application are accessed 95% of the time. With IDMS/R you can simply change these relationships to predefined joins and benefit from a dramatic boost in performance. We call it Relational Fastpath. This is what makes IDMS/R a unique relational DBMS, and a perfect system with which to build production applications. In addition, IDMS/R has the most sophisticated back-up and recovery capability of any DBMS, an absolute must for on-line applications.

In summary, IDMS/R was designed to satisfy the requirements of those who want to develop both production and end user applications faster and those who have the responsibility of processing them.



# What is

## The Information Database?



*Don Heitzmann is Cullinet's Director of System Software Development. Don joined Cullinet seven years ago. His early efforts were in design and development of IDMS-DC and he is now responsible for the complete IDMS database product line. Don is a graduate of Princeton University with a B.S. in Electrical Engineering and a Masters in Architecture.*



*Ernie Peabody is Cullinet's Project Leader for development of the Information Database. Ernie is uniquely qualified since he has experience in mainframe and personal computer processing and communications. Ernie holds a degree in Mathematics from the University of Kansas and a Masters in Computer Science from Georgia Tech.*

The Information Database is an extremely exciting product for those organizations who have studied it. They understand how important it is to the success of the Information Center concept and effective use of personal computers in their organization.

The Information Database is the critical link between an organization's data residing in databases or files located in the company, or in outside databanks, and personal computer users. While PC users can access an IDMS/R database directly, we believe that a typical company would prefer that their PC user community access a specialized database, containing pertinent information summarized from appropriate sources, rather than directly from production data.

The Information Database works this way: selected data (information) is automatically fed from IDMS/R eliminating duplication of data while ensuring timely and accurate information. Utilities are provided to feed the Information Database from various databases and files, including IMS and VSAM. The Information Database is the intelligent link because the PC users can get the information they need, without having to master mainframe systems. Facilities built into the Information Database and Cullinet PC software make this possible. The Information Database appears as a new directory on the PC, so users can move information down to the PC or up to the mainframe without having to learn a new language. As a result, the user can store a private database in the Information Database and make it available to other PC users. Sophisticated security techniques insure privacy where appropriate, while allowing sharing of information when desired.

This is why the Information Database is so important. It is the intelligent link between the PC and the mainframe and is a must for any company considering significant use of personal computers.



# What About

## Cullinet's PC Software?



*Mary Kroening is Manager of Cullinet's Personal Computer development project. She joined Cullinet in 1982, when Computer Pictures was acquired by Cullinet. Mary's experience in microcomputer software has been a key factor in accelerating Cullinet's entry into the personal computer field. Mary attended the University of California at San Diego where she worked on the UCSD Pascal system and the University of California at Berkeley where she majored in Computer Science.*



*Dave Litwack is Cullinet's Vice President of Product Development. Dave oversees all Cullinet software development activities for the company. Previously Dave held key roles in Cullinet's entry into Applications Software and in the development of the Application Development System/Online. Dave joined Cullinet in 1976. He is a Cum Laude graduate of Brandeis University and holds a Masters in Computer Science from Boston University.*

The lack of an integrated software solution has existed on the personal computer just as it once did on the mainframe. The size of the computers may be different but the problems have been the same. Cullinet derived its initial success by pioneering the concept of a comprehensive and integrated software solution to the mainframe users' requirements. We have applied this same philosophy to the personal computer. As a result, Cullinet's PC software includes all the capabilities needed by the user including: spreadsheet, financial modeling, document processing, electronic mail, relational database, graphics and information management. Individually these components compare favorably with their respective equivalents on the market, but collectively Cullinet offers a unique capability to its PC software customers, namely a comprehensive and integrated solution.

However, we don't stop there. We have developed a very sophisticated and intelligent interconnection with the mainframe via Cullinet's Information Database and PC software. This connection allows the use of reports, graphs, spreadsheets and relational data tables stored on the mainframe as if they resided on the PC disk. The intelligent link enables the database to process user queries and updates regardless of the location of the data. The resulting information can be used as input for spreadsheets, or to create graphs and documents. This entire process of retrieval, analysis and presentation can be automated, and the results shared with other users via the Information Database.

The Cullinet PC software combined with the Information Database provides the solution to corporate information problems. We make it possible to organize corporate and personal data, regulate access to it, and provide the end-user with the tools they need to analyze and understand that information to make sound business decisions.



# What About

## Cullinet's Applications?



*Fred Buckley is Cullinet's Manager of Manufacturing Applications Software Development. His efforts have been crucial in achieving the integration that makes Cullinet's manufacturing system unique. Fred joined Cullinet in 1977. Fred holds a degree in Computer Science from Thames Valley State and is a member of the American Production and Inventory Control Society.*



*Ed Blumstein is Cullinet's Manager of Financial Applications Software Development and has directed Cullinet's rapid entry into this field. He joined Cullinet in 1981 with experience in database and applications software. Ed holds a B.A. in Economics from Brown University and an M.B.A. in Finance from Boston University.*

Cullinet's Financial and Manufacturing applications, designed in the 80's, are the first applications on the market that feature both vertical and horizontal integration. Vertical integration means the application is built with fourth generation languages fully integrated with a Database Management System including Decision Support Systems and Personal Computers.

Horizontal integration means all applications share a common database thus eliminating the traditional problems of duplicate data, multiple updates, file conversion, etc., associated with older applications. For example, the purchasing and accounts payable system share the same vendor file. One update to the database means that all applications using that data are updated.

Also, Cullinet's applications are very easy to install and to tailor to the changing requirements of any organization. This is made possible through the use of a powerful fourth generation language. For example, all the on-line transactions of Cullinet applications are written using Cullinet's powerful Application Development System. In addition, information from Cullinet applications can be accessed and analyzed for senior management purposes using Cullinet's touch sensitive TREND-SPOTTER system or Cullinet's Personal Computer software.

The combination of horizontal and vertical integration means for the first time applications are available that meet the requirements of both the data processing and user management.

All successful applications software of the future will be built taking advantage of advanced database technology. Cullinet is the first to have introduced applications using this technology.



# What About

## Cullinet's Information Systems Strategies for the 80's and 90's



Robert Goldman is Cullinet's President and Chief Operating Officer. He has been intimately involved with the evolution of Cullinet's software architecture and the Company's strategic direction for the last 10 years. Bob has consistently contributed to many aspects of Cullinet's success. He holds a Bachelor of Science Degree in Computer Science from Purdue University.



Frank L. Chisholm is Executive Vice President of Cullinet and is also responsible for the Company's extensive field operations, including sales and technical support activities. As a key member of Cullinet's management team, Frank has contributed heavily to Cullinet's product development strategy. Frank has been with the Company for over 6 years. He is a graduate of Pierce College with a degree in Computer Science.

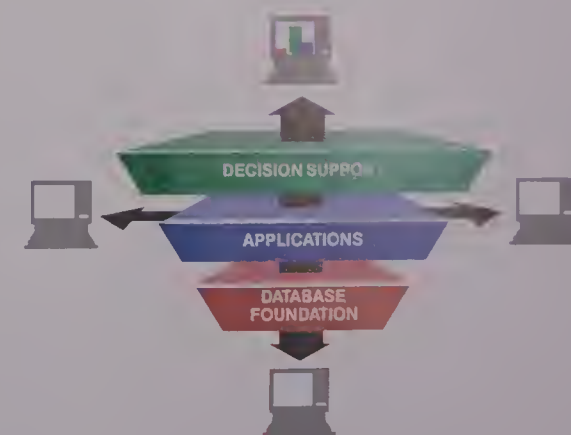
Often, as many as seven or eight major corporations from the United States and around the world visit Cullinet's headquarters in Westwood, Massachusetts each day. They are coming in increasing numbers because they've heard about what Cullinet is doing in information systems technology, and it sounds very exciting to them. After the meetings, the unanimous view is that what Cullinet is doing "makes sense" and they are convinced that Cullinet's direction in Information Systems is the route that their respective organizations should be taking. It is, in their opinion, the only coherent and intelligent approach available. Specifically, this means the full integration of Database, Applications, Decision Support Systems, Information Database and Personal Computer Software. In other words, a single source of software as opposed to the fragmentation which has plagued the computer user in the past.

Often, these visitors return to our headquarters with the President or other senior officers of their organization for an Executive Program. This Program is presented on a CEO to CEO basis. Senior management is interested to learn that there has been more progress made in the delivery on the promise of computers for top managers during the past year than there has been during the previous twenty years. The promise of computers for top management is "knowing that they have a problem in time to take corrective action." In order to accomplish this, it requires the full integration of Database, Applications and Decision Support Systems. When management understands the importance of the integrated software solution, the result is a renewed enthusiasm by them for support of the Information Systems activities of their companies. They know that their respective companies must put in place new information systems, fast, in order to compete or even survive in the future. That, in the final analysis, is what Cullinet is about, providing a complete and integrated software solution for the 80's and 90's.

## Winter Seminars 1984

continued

CITY & STATE	DATE	DB	FIN	MFG	CITY & STATE	DATE	DB	FIN	MFG
Hartford, CT	Feb 14	•	•	•	Ottawa, ON	Feb 21	•		
Indianapolis, IN	Feb 21	•	•	•	Philadelphia, PA	Feb 8	•	•	•
Indianapolis, IN	Mar 27	•			Pittsburgh, PA	Feb 29	•	•	•
Jackson, MS	Mar 15	•			Portland, ME	Feb 21	•		
Joliet, IL	Feb 9	•			Portland, OR	Mar 15	•	•	•
Kansas City, MO	Feb 22	•	•	•	Providence, RI	Mar 22	•		
Knoxville, TN	Mar 28	•			Quebec City, PQ	Feb 15	•		
Lansing, MI	Feb 1	•			Quincy, IL	Feb 29	•		
Lexington, KY	Mar 30	•			Raleigh, NC	Mar 20	•	•	•
Little Rock, AK	Mar 13	•			Richmond, VA	Feb 8	•		
Los Angeles, CA	Feb 9	•	•	•	Rochester, NY	Mar 28	•	•	•
Los Angeles, CA	Mar 27	•			Rockford, IL	Feb 14	•		
Louisville, KY	Feb 16	•			Sacramento, CA	Feb 21	•		
Madison, WI	Mar 15	•			St. Louis, MO	Feb 8	•	•	•
Meadowlands, NJ	Mar 7	•	•	•	Salt Lake City, UT	Feb 21	•		
Memphis, TN	Feb 23	•			San Antonio, TX	Mar 15	•		
Merrimack, NH	Mar 29	•			San Diego, CA	Feb 23	•		
Miami, FL	Feb 16	•			San Jose, CA	Feb 14	•	•	•
Milwaukee, WI	Mar 7	•			Savannah, GA	Feb 3	•		
Minneapolis, MN	Mar 28	•	•	•	Seattle, WA	Feb 7	•	•	•
Moline, IL	Feb 3	•			Somerset, NJ	Feb 8	•		
Montreal, PQ (French)	Mar 14	•	•		South Bend, IN	Feb 7	•		
Montreal, PQ (English)	Mar 21	•	•	•	Springfield, IL	Mar 5	•		
Nashville, TN	Feb 16	•			Springfield, MO	Mar 29	•		
New Orleans, LA	Feb 23	•			Spokane, WA	Mar 28	•		
New York, NY	Feb 22	•			Syracuse, NY	Feb 14	•		
New York, NY	Mar 20	•			Tallahassee, FL	Mar 1	•		
New York/Long Island, NY	Mar 27	•			Tampa, FL	Feb 8	•	•	•
New York/Rye, NY	Mar 13	•	•	•	Trledo, OH	Feb 24	•	•	•
Oakland, CA	Mar 13	•			Toronto, ON	Feb 2	•	•	•
Oklahoma City, OK	Feb 9	•			Toronto, ON	Mar 20	•	•	•
Omaha, NE	Mar 1	•	•	•	Tucson, AZ	Mar 20	•		
Orange County, CA	Mar 6	•			Vancouver, BC	Mar 14	•	•	•
Orlando, FL	Feb 7	•			Washington, DC	Mar 8	•	•	•
Oshkosh, WI	Feb 28	•			Wichita, KS	Mar 8	•		
Ottawa, ON	Feb 1	•			Wilmington, DE	Mar 27	•		
					Wilmington, DE	Mar 6	•	•	•
					Worcester, MA	Feb 16	•		
					York, PA	Feb 15	•		





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### Winter Seminars 1984

CITY & STATE	DATE	DB	FIN	MFG	CITY & STATE	DATE	DB	FIN	MFG
Albany, NY	Mar 13	•			Cincinnati, OH	Feb 7	•	•	•
Allentown, PA	Mar 1	•			Cincinnati, OH	Mar 21	•		
Atlanta, GA	Feb 15	•	•	•	Cleveland, OH	Feb 3	•	•	•
Atlanta, GA	Mar 28	•			Cleveland, OH	Mar 28	•		
Arlington Hts, IL	Feb 23	•	•	•	Columbus, GA	Feb 28	•		
Augusta, GA	Mar 14	•			Columbus, OH	Mar 9	•	•	•
Austin, TX	Feb 14	•			Davenport, IA	Mar 13	•		
Baltimore, MD	Feb 21	•	•	•	Denver, CO	Feb 7	•	•	•
Bloomington, IL	Feb 21	•			Des Moines, IA	Feb 16	•	•	•
Boston, MA	Mar 8	•	•	•	Detroit, MI	Feb 9	•	•	•
Boston/	Feb 23	•			Detroit, MI	Mar 14	•		
Westwood, MA					Edmonton, AB	Feb 15	•		
Bowling Green, KY	Feb 1	•			Ft Lauderdale, FL	Mar 22	•		
Bridgeport/	Mar 6	•			Ft Wayne, IN	Mar 6	•		
New Haven, CT					Ft Worth, TX	Mar 15	•		
Burlington, MA	Feb 9	•			Grand Rapids, MI	Mar 27	•		
Charleston, WV	Feb 29	•			Greenville, SC	Mar 6	•		
Charlotte, NC	Feb 23	•	•	•					
Chicago	Mar 20	•							
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## IN DEPTH

# Inside AT&T Information Systems

### Interviews: Vigilante, Casales, Schwartz

AT&T is getting down to new business in 1984. Product introductions are scheduled for the second quarter; several major acquisitions and tie-ups are coming as well as new marketing and service policies.

Lead player in the organization is the new AT&T Technologies Group, which encompasses the old Western Electric organization, Bell Laboratories, AT&T International and AT&T Information Systems. Since

Federal Communications Commission restraints oblige the company to keep its manufacturing and marketing activities separate, AT&T Information Systems will serve as the marketing end of the company for all except consumer products. AT&T Information Systems is that part of the company with which most users and competitors will deal directly.

AT&T Information  
**Continued on ID/3**



Vigilante



Casales



Schwartz



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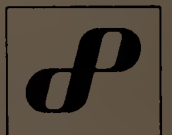
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## IN DEPTH/AT&amp;T's Vigilante

## AT&amp;T interviews

Continued from ID/1

Systems employs about 100,000 people organized in a central staff and six regions. About 27,000 people will work in sales and marketing and 60,000 will move over from the operating companies to handle service. AT&T Information Systems takes over responsibility for the embedded base currently leased from the operating companies, and from there on in it will be competing with them as well as with the independents for the customer premises equipment market.

Under the current structure, AT&T Information Systems is headed by three coequal presidents, Frank Vigilante (product planning and development), Robert Casales (marketing and sales) and Bruce Schwartz (service). All report to AT&T Information Systems Chairman Charles Marshall. In interviews last month with Brian Jeffery, research director of International Technology Group, they spoke on the market, competition and the plans and prospects of AT&T in the information processing marketplace.

Cover picture: "The Spirit of Service" illustrates the reputation for service AT&T would like to preserve as it enters a new era of business. Angus MacDonald patrolled the New York-to-Boston line during the blizzard of 1888. In June of that year, he posed for the photograph on which the drawing was based.

**Frank Vigilante**  
President, Product Planning and Development  
AT&T Information Systems

**You have been quoted as saying that new products planned for 1984 will form part of a "general plan for data." What do you mean?**

Well, instead of announcing one or two boxes, we would like to announce a little more in the way of architectural planning for data . . . I think it will be in the second quarter, although it could be later. We intend to relate announcements in several areas, probably local-area networking and some kind of processing, and perhaps some workstations. We would make an interrelated announcement and, of course, relate those products to our current line. Whatever we announce has got to relate to the rest of our product line so our customers know what we're doing.

**How are you defining local-area networking?**

What it means to me is a specialized network for certain customers. Not everyone needs a local-area network. We already have one in the System 85, and we will [enhance this capability] with other announcements. However, there are some customers who have large numbers of terminals that they want to connect to hosts. It doesn't pay to switch those, to make a lot of connections



through a voice/data switch. So if they have hundreds of terminals connecting to hosts, then they should have a separate network to serve those rather than switching them through the System 85.

We can use the System 85 as is for most customer needs for interconnection of terminals and hosts. However, if there is a very large requirement, then we want a local-area network to take care of that.

**So you're talking about something that would allow a higher**

*Nearly every major vendor wants to link up with us. And we will — we want to open our architecture, and we expect that from time to time you'll see announcements with major vendors about linking up with our systems. There's a lot of interest. I won't tell you names, but if you named six of the biggest companies around, probably four or five have called about wanting to link up with us . . . Many of them would like to go into business with us, but that's another story.*

**transmission speed?**

Yes, but more important is high occupancy . . . It will have packet-switching.

**What do you regard as the main requirements for workstations?**

One of them is that the stations that we put on work with some synergy with our switches so that we can use our own applications processors to work with them. We believe, like everyone, that we're evolving toward a point where a single station

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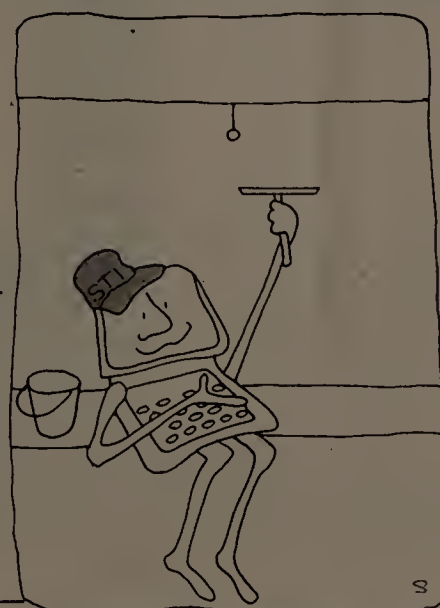


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## IN DEPTH/AT&amp;T's Vigilante

or maybe two will perform most of the functions required.

So you'll get something that performs like a personal computer but at the same time works with at least mini-level hosts. I'm not talking about big mainframes; I'm talking about minis and superminis — our workstations will work directly with those. Probably, we would also provide some kind of compatibility with [Microsoft, Inc.'s] MS-DOS because that seems to be sweeping the field. [We want] to get as many capabilities in a couple of stations as we can.

**You mentioned an announcement related to "some kind of processing." What will that involve?**

We already have an application processor attached to the System 85.

What we will be doing later is probably adding more power — we'll add an application processor that has more power than the current one, the AP 16. We'll add a bigger, more capable machine to that product line. The thing is that you have to handle large buildings. Some of the System 85s [with the larger processor] that we'll be putting in next year are for very large customers. And so they need a larger application processor than we currently have.

**Do you see yourselves moving into the territory of the DP vendors with this?**

Well, somewhat. We're talking about only a certain part of the range here. We'll have presence at the lower end and in the middle. We

have no plans for anything more than that . . . The big mainframe business is not in our plans at this time.

**So what you're talking about offering here is a communications architecture. Is that a reasonable description?**

Yes.

**Is this going to be comparable to, say, the IBM architecture?**

Well, I suppose, broadly speaking, it will be, but SNA is primarily a linkage of computers, [particularly] the large systems that IBM offers. Our architecture is a linkage of, for example, a System 85 or a Dimension with our applications processors and with terminals. So broadly speaking,

yes, we have an information systems architecture that we're evolving, but it's for different kinds of equipment than the SNA systems that IBM works with. Now at some point we need to link to SNA, and we will do that if we possibly can.

**So you see yourselves coexisting with the IBM world?**

No question about it, yes.

**What kind of response have you been getting to the Unix operating system?**

Unix is getting very popular, in many ways exceeding our expectations. There's plenty of evidence that Unix is becoming a very popular and broadly used operating system. Now I'm not saying it's going to supplant all the other operating systems, but it's going to take its place alongside all the others and be one of the more popular systems. I believe Unix has caught on. It was given to the colleges for a long time, and a lot of the students coming out want to work on Unix because they learned it in college. They bring it to the work place, and it seems to have caught on very well.

**Have you found much acceptance of Unix from corporate DP departments?**

I don't know the answer to that question. I think it's just beginning. It certainly hasn't had any penetration in the large mainframe operating systems area, no. But I believe it will.

**What will be the relationship between the kind of solutions you've been describing and the broader services offered by AT&T Information Systems?**

They're linked together. If there's an electronic mail system on a System 85 or on a related local-area network, we want to link it with a system like Net/1000, and we'll be able to move messages from our local system through . . . Net/1000 and on into either a terminal on a customer's premises that might be [linked to] one of our processors or somebody else's, or to another System 85. If you have a compatibility across the whole range of systems, you can move information from local to network and back down to local again as required.

**So you're talking about a global architecture here?**

Yes, we are. That's the kind of thing we've always done — we have networks across this country right now. Nobody else is anywhere near us on that, and we want to keep capitalizing on it. Our System 85 can be set up nationwide, System 85s that are linked together. It looks like one system. Nobody else can do that.

**Do you find that your customers are looking for that type of solution?**

Definitely. Our large customers — I could name you half a dozen, but I'm not going to — expect technological excellence from us, and they believe in the tradition of Bell Labs and Western Electric. And they also expect us to be excellent in networking. They know what we've always done — put together the world's largest

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networks — and they want us to help them plan their networks. We're doing that.

**So you are assisting companies in setting up their own networks?**

If that's what they want to do. [Or] they can buy it from us and have us run it, or they can lease it from us. We've gotten very flexible. This is a big improvement as we're getting away from regulation. We've become very flexible in service arrangements and in pricing arrangements with customers, and we'll do whatever they want. We couldn't do that in the past.

**With large customers, do you find you're dealing with a single set of decision makers or still with different departments such as DP, telecommunications and the like?**

There's both, no question about it. The large customers in particular have several departments that get involved. Many customers are also trying to get some corporate control over expenditures, which is leading them to want to centralize more. What they try to do is make deals on a corporate level and then try to get some control over what's going on in the branches and remote locations. I think they're having some success.

When they do that, they want to deal with a large, dependable vendor, and we find them very much coming to us for that kind of operation. They can't afford to risk it with a fly-by-night who might be out of business in another year. There are a

*Whether some of the computer companies will end up being in our business and we in theirs to a significant extent, I don't know. Everyone seems to think so. There's endless talk about our competing with IBM, DEC and the others, but that talk has been going on for a long time, and there really is not yet significant competition between us. Maybe there will be, but I think our main competitors will continue communications-based companies.*

lot of people in this business now that aren't going to be in it in a few years. It's overcrowded right now, and a number of our competitors will be off doing something else in a few years.

**What competitors are you thinking about here?**

I'll leave that to your imagination.

**How do you see your relationship evolving with the Bell operating companies?**

In the near term, we are largely going to be competitors of them. They are willing and able to sell customer premises equipment in their territories, and we'll be in competition with them in a number of cases. They will offer Centrex, and we will, of course, be competing against Centrex. In some cases, they will be offering products from other

faces with AT&T equipment, notably Wang Laboratories, Inc., Hewlett-Packard Co. and Bailey Controls. Are we going to be seeing more of those?

Yes, there will definitely be more like that. Nearly every major vendor wants to link up with us. And we will — we want to open our architecture, and we expect that from time to time you'll see announcements with major vendors about linking up with our systems. There's a lot of interest. I won't tell you names, [but] if you named six of the biggest companies around, probably four or five of them have called me about wanting to link up with us.

**How do you mean "link up"?**

Just about anything, but the major thing would be general-purpose interfaces, high-speed data communications, document transfer, that kind of thing. Many of them would like to go into business with us, but that's another story.

**Do you see AT&T making more substantial tie-ups with other companies, say by acquisition or joint venture?**

Well, we're looking at a number of these. How many of them are sure, I don't know, but there's an interest. Just what we'll do [is] very sensitive information. But we certainly have an open interest, and my guess is

vendors, and we will be competing against those.

On the other hand, they'll be customers of ours for certain things, and so you'll get the kind of mixed relationship that is very common these days. Companies can be customers of each other and competitors with each other, and that's what's going to happen here.

**But do you see the Bell operating companies emerging as fairly significant players in the marketplace?**

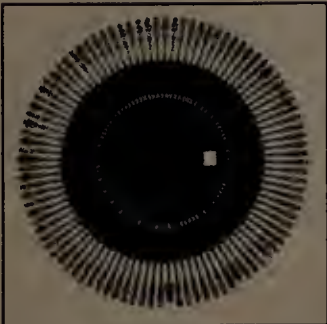
I think they would like to be. It remains to be seen whether that will really happen.

**A number of agreements have been announced relating to inter-**

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## IN DEPTH/AT&amp;T's Vigilante

that we'll do some things as time goes on.

**How is your relationship with Digital Equipment Corp.?**

We have a long-standing relationship with DEC — we're very good customers of each other and have been for years. And I would say our relationship is still good. That's all I want to say.

We haven't seen any major endorsements from DEC on the Unix operating system.

I don't want to comment on that.

**Where do you see AT&T Information Systems in five to 10 years?**

The first thing I will tell you is that we will still be in business, and I

expect we'll be prospering. We believe that working in an unregulated environment that is growing more unregulated with time, we can begin to improve our market share in all areas of voice communications and voice/data communications. And I expect that five years from now our market share in those areas will be considerably higher than it is now.

**Whom do you see as your main competitors in that time frame?**

One of them will probably be Northern Telecom. They're a reasonably broad-based company and I believe they'll continue to do well. Another that will hang in there is some collection of the Japanese companies. Nippon Electric seems determined to stay in this business, and

obviously they have the resources to be successful, so I would expect Nippon Electric to be a significant competitor of ours indefinitely.

Whether some of the computer companies will end up being in our business and we in theirs to a significant extent, I don't know. Everyone seems to think so. There's endless talk about our competing with IBM, DEC and the others, but that talk has been going on for a long time, and there really is not yet significant competition between us. Maybe there will be, but I think our main competitors will continue to be some of the communications-based companies. Some of the others I believe will be gone by that time.

Some of the small PBX vendors have found a niche here and there, [but] I have serious doubts that

they'll be able to survive standing on their own. They may get absorbed by others and in that way survive, but otherwise I don't see how they're going to make it in this business with the current competitive levels. But I could be wrong. The business could expand a lot more and make allowance for everyone.

**What about competitors in the computer services business?**

Well, we have some competition with them through our Net/1000 offering; there'll always be some competition there. We have competition

*We can assist customers in setting up their own network, if that's what they want to do. Or they can buy it from us and have us run it, or they can lease it from us. This is a big improvement as we're getting away from regulation. We've become very flexible, and we'll do whatever they want.*

there now with IBM, but it's not a big volume of business. That tends, in any case, to be an offering that we like to make together with our other products, and I don't see it dominating our business.

**How do you see the long-term changes in AT&T Information Systems?**

Well, I guess the major change has been a lot of communications processing being added to our products. I don't want to call it data processing — that's not what it is. It is processing for communications, processing for networking, allowing people to communicate more easily. That's the area that I believe we will grow and prosper in because that's been our tradition, supported by very strong technology based on our Bell Labs roots.

**Presumably you'll be more competitive?**

There's no question about it. We have a strong thrust now, and I believe we'll continue to hone down the organization and sharpen our own competitive skills. Some of our obligations from the past give us a little more expense in some areas than we would like, but we're taking care of those things. We're very confident of success. I think when we get past all the regulatory hurdles — and we're almost there now — when we can spend our full energy on the business, we'll do very well.

**Do you think that will be reflected in the public perception?**

I already see a lot of perceptions turning around. When I see all the negative publicity we got a year ago, and I compare that to now, I think it's a lot better. There's still some negative stuff out there, but I see a lot of good things, too. It is turning around, and I believe there'll be a preponderance of good information about us in the press as time goes on, although there will always be people that find some fault with big organizations and want to kick us around a little bit. That's their prerogative.

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## IN DEPTH/AT&amp;T's Casales

**Robert Casales**  
President, Marketing and Sales  
AT&T Information Systems

**With the divestiture final, what are your priorities for AT&T Information Systems?**

First of all, AT&T leads in and is committed to a major posture in the world of information movement and management. There is a great opportunity for our business in that environment. There is, we believe, a great need in the marketplace for the capabilities that we have as a corporation. AT&T Information Systems, then, is the deregulated entity with the mission to bring that technology and those products and services to the opportunities in the marketplace.

Now, we've looked at that marketplace in a very broad way, and we've cut it in ways that would segment functions, in ways that would segment customers, industries and so on. So when we talk about a direction for the corporation, we're talking about it in the context of a "polar direction."

In that context, we think about doing business in those arenas that you might want to segment along the lines of data and voice. For voice, [in terms of AT&T Information Systems], I mean the premises equipment and networks associated with voice; we look at enhancing services with computer-based applications in transfer, storage, retrieval, editing and so on.



[On the data side], we look at the office environment, what has been an office equipment environment but is really evolving to what we think of as an office automation environment. We perceive our potential to cut across all those segments.

**Looking at the office automation environment, AT&T has traditionally been selling PBXs to telecommunications departments. How are you changing that emphasis now?**

Well, we're finding that it is shifting in the marketplace itself. As the Fortune 500 companies begin to link

*The tendency is to characterize a solution as being offered by a company in a specific business. What we're talking about is solutions that cut across these definitions. It isn't that someone offers a computer solution and someone a communications solution. They both offer a solution that embodies the technologies of both computing and communications. We do not want our customers to think of decisions associated simply with hardware; we want them to think in terms of a much broader business context.*

their business strategies with their computer and communications strategies, the decisions that they make cut across all those areas. So when you market, you have to market to all of those areas — we market to the telecommunications manager, we market to the DP managers and we market to the decision-influencers.

**So you will, in fact, be offering solutions that have previously been offered largely by computer vendors?**

I think that's correct. I think it's important to recognize that often the

tendency is to try and characterize a solution as being offered by a company that has been in a specific form of business. What we're really talking about here is solutions that cut across these definitions. It isn't that someone offers a computer solution and someone a communications solution.

They both offer a solution that embodies a lot of the technologies of both computing and communications. We do not want our customers to think of decisions associated simply with hardware; we want them to think in terms of a much broader business context.

**Do you see any shift in the market towards more centralized decision making in, say, office automation?**

What we see in the marketplace is an enormous proliferation of divergent technologies — personal computing is an example. These divergent technologies create considerable pressures for managers — they have to ensure that the technologies now being utilized permit them to bridge from where they've been to where they believe they want to go. They have to be able to protect their investments in, for example, their word processing systems or their applications portfolio. So they need to know that new technologies permit them to utilize those applications and permit access to those applications to be expanded within their user groups. I think they are trying to manage both the centralization

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## IN DEPTH/AT&amp;T's Casales

and the distribution of technology, and it's not an easy task.

**You're talking about the integration of a number of different technologies here. How does local-area networking fit into the picture?**

We see local-area networks as being really the highway that permits our customers to move informa-

tion in different media — voice, data, video, graphics and so on. It's the highway for the various professionals and departments within the company that permits the integration of that information and its transfer to users in various forms. [It may be] high speed or the lower band speeds, but all of it will be managed on the network. It's an open approach. We think that's terribly important to productivity. Our customers

can begin to manage the distribution of information to those in their business who need to have it.

**So you would see these needs as something that could not be handled by existing PBX technology?**

You have various transmission media — twisted pair, for example, which works very well in the context of a PBX, is a major

component of the local-area network. You might have other requirements in terms of very high-speed data that might be outside the realm of the PBX, but that doesn't mean that you take it outside the local-area network. Our plan is to have a local-area network that is integrated with a PBX.

**How do you see the future of the Centrex system?**

I think Centrex has been a good service. The issue there really rests in how responsive it can be to the user, and I think the marketplace is looking for greater access, greater flexibility, greater control of the technology by the customer. I think that is more difficult to do with a service like Centrex.

**Will we see more links between AT&T and other vendors, similar to the HP and Wang announcements recently?**

Yes, clearly, with vendors that have a vested interest in the marketplace we're talking about. Those who have a customer base that they want to protect, who want to ensure that their systems interact with ours so that the opportunities for utilization of their systems by their customers are maximized . . . This isn't the kind of game where any one company can be all things to all people.

**One of the things we've been seeing in the marketplace is the emergence of IBM as a de facto standard. What is AT&T's position on standards matters?**

If you mean in terms of, say, an IBM architecture that we would have to be compatible with in order to be successful, we clearly will be compatible. Do we need to be compatible with SNA [Systems Network Architecture] and SDLC [Synchronous Data Link Control]? Yes, we intend to and we will do that.

**We have seen a number of statements from AT&T Information Systems that indicate you will be offering a distinct communications architecture next year. Is that correct?**

Yes, you will see a communications architecture. That is part of our philoso-

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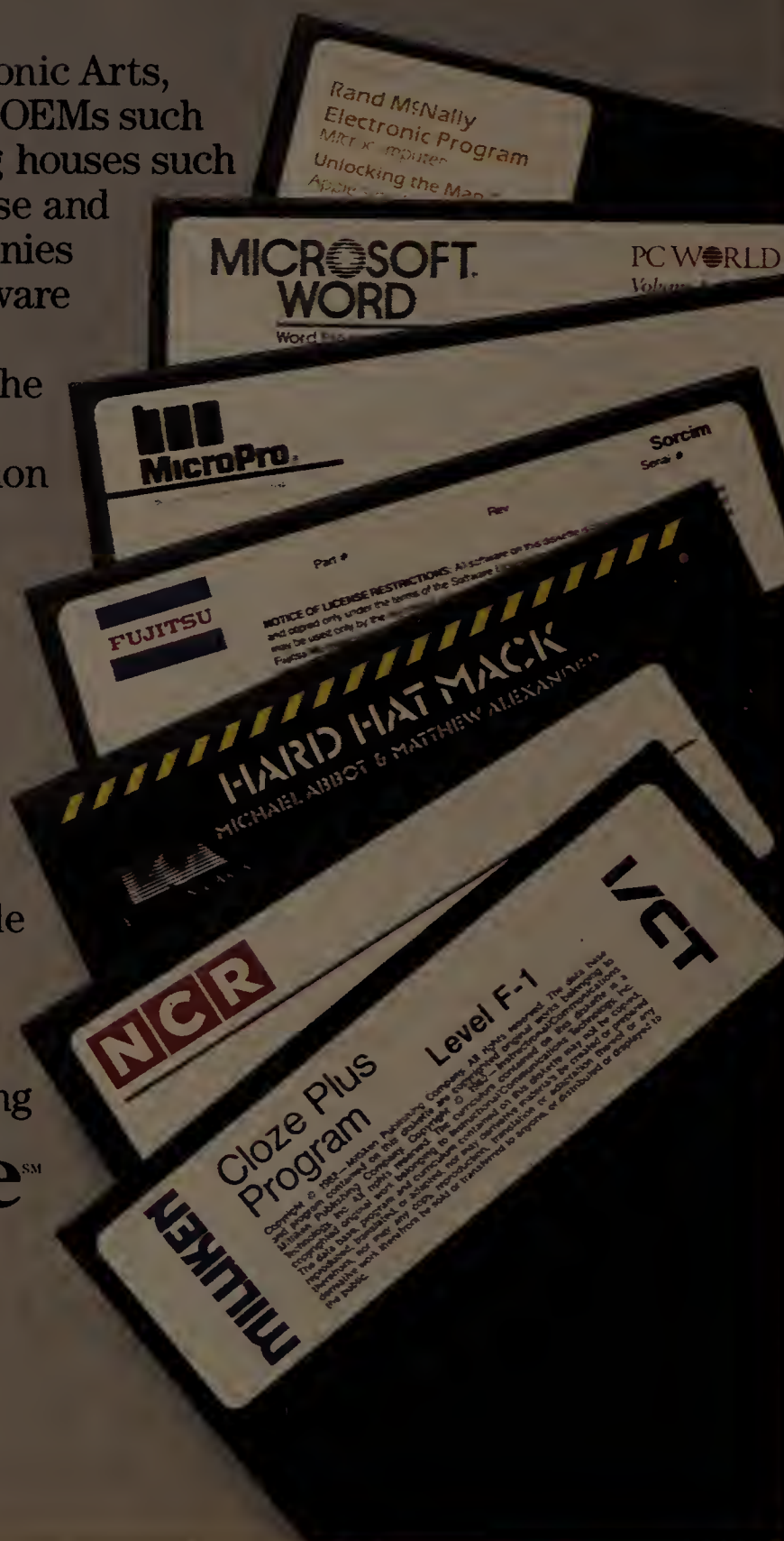
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phy in terms of our business and in achieving what we expect to achieve in the marketplace, that that architecture will be open.

What about the low end of the PBX market, say the small business market? What penetration are you seeing there?

People want the capability for voice and data in communications in a way that doesn't require expensive capital outlays. They evaluate it with considerable price sensitivity, they want the function level that's appropriate to the needs of their business. I think they want access to those networking capabilities that permit them to grow their business and interact in various ways with other businesses.

So you are thinking in terms of providing the small businessman access to the outside world through data as well as voice, presumably through Net/1000?

That's correct. It's why the concept of our systems and network services being shared as well as dedicated is very important, because in sharing them, you then have a very low threshold of entry per user. You might use an example where a small business wants to use a service like Net/1000 for interactions and purchase orders — with us, or with one of their customers or suppliers. They would have a capacity in the network to do that and to utilize the technology and intelligence in the network to do that. [It] offers them

*The issue of data base management is terribly important. What is, perhaps, paramount is the operating system software that supports those data bases and lets you begin that accessibility to a wide range of users . . . We see a tremendous amount of activity in the area of data base management and a tremendous opportunity for access to data base services. Data has to be packaged and then distributed to customers, and that distribution technology has to have access to a central data base and has to accommodate all the users on the other end.*

considerable efficiencies and the potential for economies over other methods.

What kind of market interest are you finding in data base services?

I think the issue of data base management is terribly important. What is, perhaps, paramount is the operating system software that supports those data bases and lets you begin that accessibility to a wide range of users. If you look at a service like videotex, critical there is the cost of the technology and the access that

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## IN DEPTH/AT&amp;T's Casales

you can offer for it. We see a tremendous amount of activity in the area of data base management, and I think a tremendous opportunity for access to data base services. If you look at the financial services industry, for example, you see more and more use of on-line data bases. Data has to be packaged and then distributed to customers, and that distribution technology has to have access to a central data base and has to accommodate all the users on the other end.

**How do you see videotex evolving?**

There's a lot of review of that question today, and, in fact, we've had discussions with some of our large customers. I think that [companies in] the marketplace are working

*We're finding that it is shifting in the marketplace itself. As the Fortune 500 companies begin to link their business strategies with their computer and communications strategies, the decisions that they make cut across all those areas. So when you market, you have to market to all of those areas — to the telecommunications manager, to the DP manager and to the decision-influencers.*

to ascertain how that technology and service can be utilized in their business, especially that have broad-based consumer business. I think this is going to evolve in the course of the next few years, but I think it's kind of being shaped at this point.

**AT&T Information Systems is obviously going to be presenting some new capabilities here. But then, so are a lot of your competitors. How is AT&T-IS different?**

Well, I think that if you look at

the world or the marketplace the way we have looked at it, and the way you and I have discussed it, AT&T-IS comes from a very strong base in terms of communications. I think the marketplace recognizes, as we recognize, that's what is really going to be at the hub of the integration that we talked about.

I really think that we are better positioned than any of our competition, and we have a very real distinction from our competitors in terms of our history and our knowledge, resources and service. That's really captured in our antecedents in Bell Labs, in Western Electric and in our long history of service to the marketplace. I don't think there are many competitors today that enjoy equal stature in terms of capabilities.

**Who would you say does enjoy equal stature?**

Well, if you were to say who enjoys the complement of R&D and service in the same way, I think IBM very much enjoys that reputation.

**You've talked in terms of knowledge, resources and service here. You haven't talked about being innovative — AT&T has not recently had the reputation as an innovative company.**

It's pretty tough when you have been primarily a regulated company to enjoy an innovative reputation. I think we have enjoyed a reputation of being innovative in our basic research and in some of our technologies. For example, cellular radio is an important technology and really we were ready to bring it to the marketplace about 10 years ago. The course of regulation has taken that much time. You can't enjoy an innovative reputation when you have to deal with the rigors of the regulatory process to bring technologies to the marketplace.

**You have a liberal arts background.**

I do — my college major was English. My background professionally is in marketing.

**Has your original liberal arts background been an asset?**

Very much so. What I think is of great benefit in a liberal arts background is the capacity to develop a capability in thinking, being able to understand issues and being able to translate thinking from the strategic to a tactical perspective. Being able to recognize that if you are in the business of dealing with the marketplace and with customers, much of your strategy must be driven from your capacity to think as an organization.

I think it's fundamental — if you think about all of the dynamism taking place in the market, you need the ability to understand and to respond quickly and to use different marketing techniques, to use a multitude of distribution channels, owned and nonowned, to be able to manage and stay ahead. Much of that, I think, resides with those companies that have the ability in their executive environment to understand and to have confidence in their thinking, confidence in their ability to take risks, confidence in the sense of perhaps not being afraid to make mistakes. And I think the better able a corporation is to think [in this way], the greater the success it will enjoy.

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## IN DEPTH/AT&amp;T's Schwartz

**Bruce Schwartz**  
**President, Service**  
**AT&T Information Systems**

**What is the AT&T Information Systems service organization going to look like in 1984?**

It will consist of roughly 60,000 people. That is made up of about 30,000 systems technicians and 13,000 people in our business service centers. We have various groups of engineers, and the balance would be management and support personnel. In prior days, we had 22 operating companies, each with a service division, so we had 22 separate service organizations, so to speak. We've been molding that into a national service division headed up by six regions rather than 22 operating companies. So we have a substantially slimmed-down management staff as a result. And then sub-organizations to the regions — we had roughly 350 district level operations divided among the 22 operating companies. We've since reduced that to about 100 such district organizations.

**What difference is the average customer going to see?**

Let me talk about a couple of things in that area. Since we're nationally organized now, we have established a high-level maintenance surveillance operation — we call it National Customer Service — in Denver. From that location, we remotely monitor the higher end of our PBX switches on a constant surveillance basis. That's new, plus it's more efficient.

In addition, we've established some technical support centers in clusters on a national basis, and we've centered there some high-level expertise in voice, data and software. We call them Voitek, Datek and Softek — not very inventive, but they're pretty effective. The purpose is to give field personnel a close-by location where they can call for troubles that they're not able to fix right away. We've also established in each of the regions a high-tech laboratory. There we have models of each of our major products, so if we get into a difficult situation, we're able to simulate the trouble there with experts and talk the on-site technician through to a problem resolution.

Probably the thing the customers have noticed most is our new mode. We've been moving into this all through 1983 — it's not a "stroke of lightning" kind of thing. In the past, we had repair centers located in each of the Bell operating companies — thousands of them. People who had trouble would call into this repair center, and then the people there would assign the trouble reports to systems technicians on a random basis. So one customer might see four or five different technicians in any given period.

We've been putting in place for the last 12 to 14 months [a system where] we assign customers on a permanent basis to a particular technician who is dedicated to that account. The smaller customers may have one technician who has four or five customers on a permanent basis. That way we're able to zero in on our customers . . . Under the plan or reorganization, the overriding rule has

been that people follow their work. So in a high percentage of cases, easily 90%, the technician who has been maintaining a customer's switch before divestiture will be maintaining it in the future. A lot of customers won't be seeing a change in personnel. But we'll have more of an entrepreneurial approach to service and maintenance.

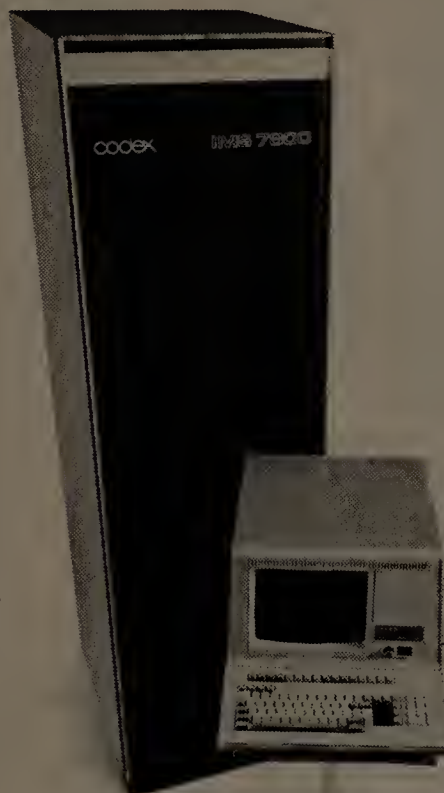
**Will we be seeing any major changes in service policies?**

Yes, in fact there'll be several. As the rules go from regulated to unregulated, of course there's a lot of opportunity for change. We'll give to the customer more options on service arrangements. The customer may want maintenance eight to five, Monday through Friday — we'll have an



*Let me say some of the things that haven't changed: dedication to service, a commitment to service that just transcends everything we do. I have an old picture in my office . . . of a lineman trudging through the night in the snow with a coiled wire over his arm, looking for a break in the line. That always kind of captures what you call the spirit of service. Maybe it's all corny, I don't know, but it's a deep heritage.*

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*We've been putting in place for the last 12 to 14 months [a system where] we assign customers on a permanent basis to a particular technician who is dedicated to that account. The smaller customers may have one technician who has four or five customers on a permanent basis. Under the plan of reorganization, the overriding rule has been that people follow their work.*

arrangement for that. Other customers may want 24 hours, seven days a week, and we'll have an agreement in that. Others will want more — they may want someone to help design or plan their entire system. We'll have an arrangement for that.

**You'll be offering more in the way of support for system design, configurations, that kind of thing?**

Yes. We have in our group a tremendous network engineering capability — very good at network design, very good at network maintenance and very good at network monitoring. So we can monitor the performance of customer networks, recommend changes and more effective rearrangements. We know the communications business.

**How will the kind of ser-**

**vice you will be offering differ from that of your competitors?**

I think it's substantially better. We're everywhere. We have a ubiquitous force, and they're highly trained. For example, we've trained a number of technicians this year in software . . . We've trained about 300 so far through this new software training. We review Unix, we review about four computer languages and do some basic programming. I've got to tell you, they're just like kids at a candy store. Those that have gone out to customers afterward are just eager to get in and [talk] with customers about how our applications processors interface with other applications. So we're going to continue that training as we need it.

We have a nationwide remote maintenance testing system that's already deployed. And we have a nationwide spare parts inventory. We're really equipped. We're in all the major locations, where we have trained people. And we have an excellent reputation with our customers. We're not complacent about it; we're out to make it even better than it is. That is our major objective, to increase dramatically the level of customer satisfaction with our service.

**How do you propose to do that?**

In a number of ways. First and foremost is the process I described earlier where we have assigned a technician to accounts. We call it our customer service management system. It's the technician's account, and he or she becomes more deeply involved with it in performance. The technician knows how the system operates, how the customer wants it to operate.

**Yes, but how do you judge performance?**

Several ways, the most important of which is the customer satisfaction testing process we have where we constantly test customer satisfaction with the various aspects of our service. From

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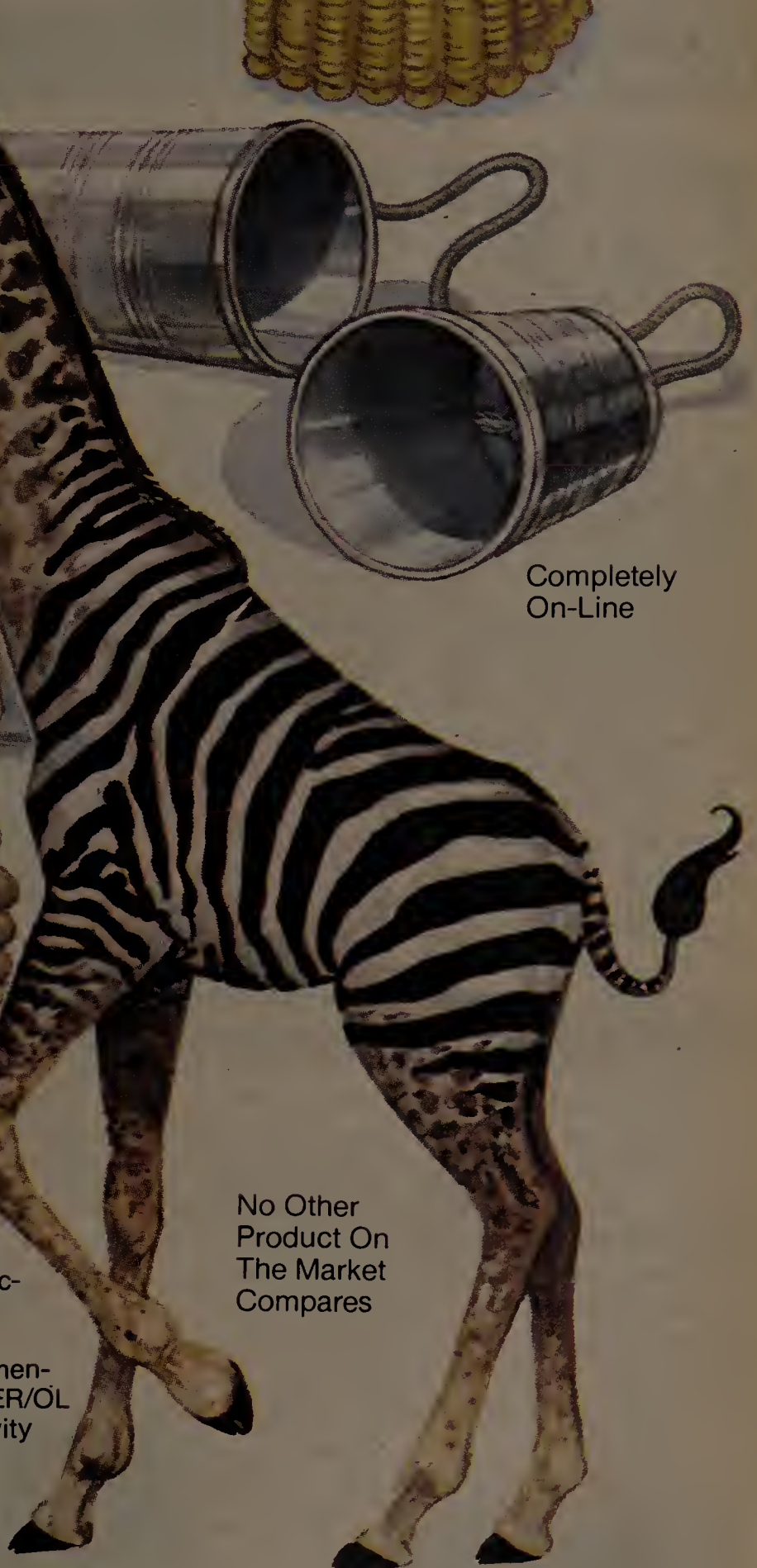


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## IN DEPTH/AT&T's Schwartz

the start, we [cover] the salesman, the billing procedure, the order process — whether it's on time, whether people are courteous. It's a system we've had in operation for a couple of years now, so we know its statistical soundness. We do a lot of factual testing on how many customer complaints there are, how long it took us to process those complaints, how long it took to repair.

**How important is the service function to selling AT&T Information Systems?**

I've talked to a lot of customers lately about this and in a nutshell, as you add features and functions to your communications system, as your communications system becomes your information system, it becomes the way that you run your

business. It's not just something you use to communicate on an intercom with your associates, or to get a call from outside — it is the way that you manage your business. Therefore, what becomes paramount above things like price, perhaps an extra whistle or gong [is] reliability. Reliability is very high on the list. Customers are absolutely aware of that.

**Are you going to be making any major changes in pricing?**

No, I wouldn't say "major." We'll provide more options to customers, and they'll be priced competitively. But I wouldn't say they'll be major changes.

**AT&T Information Systems has concluded a number of agreements with companies like Wang and Hewlett-Packard for implementing interfaces. What is your position on systems attached to AT&T equipment in that way?**

We're in the service business. We have a huge embedded base now, but it's not 100% Western Electric. We maintain equipment that is not Western Electric now, and I wouldn't see any reason to change that policy.

**So you might be extending maintenance coverage to some of these other systems?**

We'll have various maintenance agreements available for customers, and if they're part of a major AT&T Information Systems system, it may be part of the service.

**How are your relations with the other divisions of AT&T Information Systems?**

I think the Service Division is part of the team. We have a team approach, with the people with development, Bob Casales and his people with marketing/sales, our people with installation/maintenance... Everyone understands that while each is important, by itself it can't do much. If you had the best design group in the world, for example, and if you couldn't sell it, you really haven't accomplished much. Vice versa, if you have the best salesmen in the world and don't have a well-designed product, you're not going to be very successful.

**You have been with the Bell system now for more than 30 years, starting as a lineman. How have you seen it change over that period?**

I don't think I've seen any cataclysmic changes over that period. I've seen us move in the last year — AT&T Information Systems has put about 35 new products in our product line. Technology is moving at a much faster clip than it was 10 years ago. Let me say some of the things that haven't changed: dedication to service, a commitment to service that just transcends everything we do. So that's not changed. I have an old picture in my office of Angus MacDonald — perhaps you've seen it. It's a pretty famous picture, at least in the Bell system, of a lineman trudging through the night in the snow with a coiled wire over his arm, looking for a break in the line. That always kind of captures what you call the spirit of service. Maybe it's all corny, I don't know, but it's a deep heritage.

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# SYSTEMS & PERIPHERALS

## TI to offer 32-bit CPU First to use MIT's Nubus

By Patricia Keefe  
CW Staff

AUSTIN, Texas — Texas Instruments, Inc. has introduced the Nu Machine, said to be the first commercial system to implement the 32-bit technology developed at MIT. TI now owns the rights to that technology, which it calls Nubus.

TI's first 32-bit processor, the Nu Machine is a high-performance system based on the 37.5M byte/sec Nubus, making the system particularly well-suited for applications requiring multiple or special-purpose processors, such as very large-scale integrated circuit design, printed-circuit board design, simulation and advanced software development, according to the vendor.

The system is expected to attract the interest of sophisticated end users, system integrators and OEMs in the scientific and engineering marketplace.

The Nu Machine is currently supplied with a Motorola, Inc. 10 MHz, 68010-based processor with a 4K-byte, 45-nsec cache memory and a memory management system implemented in hardware. Also included is a Unix-based operating system, high-resolution graphics display, mass-storage peripherals and an Intel Corp. Multibus subsystem.

TI's system reportedly supports 32-bit data transfer and addressing and can support future 32-bit microprocessors. The processor-independent Nubus also allows systems to be designed using other standard microprocessor families or special-purpose instruction sets.

The 800- by 1,024-pixel, 15-in., 60Hz, noninterlaced black-and-white display and bit-mapped graphics controller produce graphics and multifont text. Two



TI's Nu Machine

Winchester disk storage systems are available: a 474M-byte Winchester disk with 20-msec access time and an 84M-byte disk with 20-msec access time. For disk backup, ½-in. streaming and ¼-in. cartridge units are available, the vendor said.

Also included are a high-bandwidth translator, said to provide an interface between the Nubus and Multibus systems, and a windowing system that provides capabilities for multiple virtual terminals on the Nu Machine's high-resolution display. Programming languages currently available include Fortran and C.

The basic Nu Machine is a small office model configured with a 68010 CPU, a 512K-byte memory, an 84M-byte disk, a ¼-in. cartridge tape, display, keyboard and mouse.

It is end-user priced at \$53,450, the vendor said.

TI, P.O. Box 402430, Dallas, Texas 75240.

## Oldies still goodies, but change to come

### HARD TALK

TOM HENKEL

*Computerworld*, as do similar publications, talks endlessly about new products, new technologies and industry firsts. The fact is, most DP executives are in

charge of what could best be described as ancient hardware — technology that is pushing 20 years old.

While there are outlandish stories about U.S. government agencies still using tube-based processors and dinosaurs like the Philco 2000, classics like IBM's 360 and 370 lines still make up about 10% of the domestic IBM installed base, according to the market research firm, International Data Corp. (IDC). Furthermore, IDC reports that there are still almost 600,000 traditional minicomputers currently in use — the kind most industry watchers wrote off two years ago. IDC predicts that it will take at least until 1985 for the 32-bit architecture made popular by the superminicomputer to become the dominant architecture among computer users.

So if your idea of a step-up in technology is a 370/158, you're not alone. There appears to be a big difference between the technologies that are ballyhooed on the business side of the computer industry and those that are actually used in the trenches — the DP shop.

But just because there is little hope your company will suddenly decide to embrace the latest in computer technology, explore gallium arsenide circuits or install optical disks does not mean you

See **OLDIES** page 74



Replacement for  
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### INSIDE

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Gould/76

## Unidot 32-bit systems debut Based on Unix version

GOLDEN, Colo. — Unidot Systems, Inc. has announced two multiuser, 32-bit systems utilizing the University of California at Berkeley version of Unix.

Cerebra I is said to offer performance similar to Digital Equipment Corp.'s VAX-11/750 system, and the Cerebra II is said to be roughly equivalent to a DEC VAX-11/780 processor.

According to the company, the Unix-based systems will be useful in universities, government agencies and commercial organizations using eight to 32 workstations. Officials say that the systems' floating-point processor will be useful for computer-intensive applications.

The Cerebra systems are based on the National Semiconductor Corp. NS16032 32-bit microprocessor and reportedly feature virtual memory using software utilities distributed by the university.

The systems use the Intel Corp. Multibus, an IEEE 796 bus, to offer options for peripheral configuration, the vendor said.

They are said to feature 8K bytes of

cache memory with a memory-cycle time of 45nsec.



Unidot's Cerebra

The Cerebra I has 2M bytes of main memory, 84M bytes of high-performance disk storage, a 16-line intelligent serial controller and either cartridge tape or floppy disk backup, a Unidot spokesman said.

The Cerebra II is said to include a second CPU with cache memory, eight additional serial lines and an additional 1M byte of memory.

The units are reportedly packaged in office-style pedestals with locks designed to prevent tampering of cables, boards or consoles.

Cerebra is the first system to be marketed by Unidot, which has operated primarily as a consulting firm for several years, the spokesman said.

The systems are scheduled for delivery in April, according to Unidot.

Prices start at \$36,895 for the Cerebra I and \$46,000 for the Cerebra II, the vendor said.

Unidot Systems, 602 Park Point Drive, Golden, Colo. 80401.

## CAM/CAE stories needed for report

There's an automation revolution happening on the factory floor, and computerized manufacturing systems are leading the charge. *Computerworld's* March Special Report will take an in-depth look at computerized manufacturing systems and how they are altering production, planning, operations and the relationship between DP departments and factory automation people.

The report will focus on computer-aided manufacturing and engineering, material requirements planning, robotics, inventory and shop floor control. More importantly, it will look at the impact of these technologies on traditional manufacturing operations.

Contributions are welcome in one of two forms: a tutorial covering a trend or an application story describing a case study of a particular user and product. Manuscripts should be three to six double-spaced typewritten pages in length. The deadline for all submissions is Feb. 10. Charts, photographs or other graphics are encouraged.

Authors should include with all submissions a very brief biography and a telephone number at which they can be reached. Articles should be sent to Bill Lamberis or Pete Bartolik, *Computerworld*, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.



## SYSTEMS &amp; PERIPHERALS

TURNKEY  
SYSTEMSULTIMACC BUSINESS  
SYSTEMS GROUP  
Champ

The Ultimacc Business Systems Group, a subsidiary of Storage Technology Corp., has announced the Champ, a 16-bit multiuser turnkey business system based on the Fairchild Camera and Instrument Corp. 9445 microprocessor.

Aimed at businesses with annual sales of \$1 million, the Champ consists of a central processing unit with 128K bytes of random-access memory, one 50M-byte hard disk drive, a 64 line/min bi-directional printer and two STC Model 4200 terminals, the vendor said.

The basic Champ system can accommodate up to six terminals. A 256K-byte memory upgrade allows users to add up to 15 terminals. A 30 line/min band printer and cash drawer module are also available, according to a spokesman for the vendor.

Designed to be used by operators without previous data processing experience, the system includes its own operating system, called the micro-Champ, peripherals, software documentation, training, telephone support, maintenance and financing, the vendor said.

The Champ system costs \$35,000 and was designed for turnkey users in the wholesale/distribution industry. Additional terminals cost \$1,950 each, the vendor said.

*Ultimacc Business Systems, 4 North St., Waldwick, N.J. 07463*

UNITRONIX CORP.  
System 4000

Unitronix Corp. has announced its System 4000 with fixed Winchester disk drives of up to 800M bytes and an 80M-byte magnetic tape drive backup.

The System 4000 reportedly offers emulation of Digital Equipment Corp.'s RSTS/E, RSX-11E and VMS, Unix and S&H Computer Systems, Inc.'s TSX operating systems

and features 256K bytes to 8M bytes of main memory.

According to the company, the system is available with the DEC Micro-11, PDP-11/23 Plus, PDP-11/24, PDP-11/44, PDP-11/73 or VAX-11 processor and is compatible with existing 18-bit direct memory access controllers or DEC Q-bus interfaces, as well as 22-bit devices.

Unitronix also announced that the system offers both DEC and non-DEC peripheral options.

Other features are said to include a port serial interface for up to 64 terminals, a peripheral bus mapping module, 18- and 22-bit LSI-11 backplane handling old and new controllers and communications options to multiplexer and modems.

The system reportedly runs DEC diagnostics, according to the vendor.

It is available with a 160M-, 300M-, 500M- or 800M-byte fixed Winchester drive and with an optional 80M-byte removable Winchester drive for backup, the vendor said.

The system is available

now at prices ranging from \$29,000 to \$53,000, depending upon the desired central processor.

*Unitronix, 197 Meister Ave., Somerville, N.J. 08876.*

CAV CORP.  
Cav/Cad

CAV Corp. has introduced Cav/Cad, a turnkey computer-aided design and manufacturing (CAD/CAM) system that uses a 32-bit Motorola, Inc. 68000 microprocessor and the Unix operating system.

The system offers three-dimensional CAD; multiuser, multitasking capabilities; automatic dimensioning and bill of materials generation; and menu-driven graphics production, according to the vendor.

A base CAD/CAM system consists of a 68000 microprocessor; 1M byte of random-access memory, expandable to 5M bytes; 30M bytes of hard disk storage, expandable to 500M bytes; a graphics terminal with 1,024- by 1,024-pixel addressable resolution or a 1,024- by 768-pixel viewable resolution; a 1M-byte floppy disk drive; six RS-232 ports, which can be expanded to 12 ports; and a digitizing tablet.

The system can be expanded to support six users, a Touch-Tone screen, tape storage and a modem, according to CAV.

The system price is \$50,000.

*CAV, 3130 La Selva Drive, San Mateo, Calif. 94430.*

FOUR PHASE SYSTEMS,  
INC.

## Low-end turnkey system

Four Phase Systems, Inc. has announced a low-end turnkey system which can accommodate up to eight terminals using the firm's Vision distributed data processing software.

The system was designed to address a variety of applications and configuration requirements of the small-scale office environment. It will include a complement of peripheral devices, data transfer capabilities and software offerings, the vendor said.

The system includes 96K bytes of processor memory and 5M-byte disk capacity. The CPU incorporates the vendor's proprietary architecture, featuring window into memory and interrupt-free display. Each terminal reportedly can handle more

than 10 keystroke/sec without any perceivable delay. The alphanumeric, key-punch-style keyboard was designed for data entry, IBM 3270 simulation and Vision, according to a spokesman.

The system is offered in two configurations: either with a bisynchronous communications controller or with a magnetic tape drive. A sample configuration consisting of a CPU, bisynchronous communications, eight terminals and keyboards and a lineprinter sells for \$34,812.

*Four Phase Systems, 10700 N. De Anza Blvd., Cupertino, Calif. 95014.*

## PROCESSORS

INTERNATIONAL  
TECHNOLOGY GROUP,  
INC.

## Integrity system expansion

International Technology Group, Inc. (ITG) has announced the expansion of its Integrity computer system from 64- to 96-terminal capacity.

The system uses twin Data General Corp. Eclipse S/140 processors, each with 2M bytes of erasable correctable memory, and reportedly provides disk storage space of up to 2.4G bytes.

The Integrity operating system is compatible with Mini Computer Systems, Inc.'s Micos system. The ITG enhanced version of Micos Extensive Basic supports CALL routines, reducing a typical program size by 50%; offers Boolean logic to facilitate structured programming; and can address up to eight 600M-byte logical disk volumes, a spokesman for the vendor said.

The low-end, DG-based Integrity systems utilize single 128K-byte DG Nova series processors and support Control Data Corp. Lark II disk drives — 25M bytes fixed, 25M bytes removable, according to the vendor spokesman.

Nationwide hardware and operating system maintenance service is provided by ITG. All systems contain on-board diagnostics and are continuously monitored via ITG's remote support network.

Prices start at \$175,000 for a dual-processor configuration with 64 terminals, ITG said.

*ITG, 3 Barker Ave., White Plains, N.Y. 10601.*

## OLDIES from page 73

can ignore technology. DP shops are changing at a much more rapid rate now. DP managers who used to plan on making hardware changes every five years are now making those changes in three. Larger shops say they re-evaluate their hardware

needs every six months.

And let's face it, you probably won't be locked into your current job forever.

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CW-AK



## SYSTEMS &amp; PERIPHERALS

## DATA STORAGE

CUSTOM SYSTEMS, INC.  
BMX-1 disk controller

Custom Systems, Inc. (CSI) has introduced a disk controller, the BMX-1.

The BMX-1 is plug-compatible with the burst multiplexer channel on Data General Corp. minicomputers. According to the vendor, it allows users to select any storage module drive-interfaced disk drive for use with the DG S-140, S-280 and MV Series CPUs.

The product offers the user four disk drive connect ports with software-configurable drive characteristics on a port-by-port basis.

According to the vendor, the unit uses electronically erasable programmable read-only memory technology, eliminating the need for switches and making all functions configurable via downline loaded software.

The BMX-1 contains a 32-bit error correction code, offering burst error correction to 11 bits in length.

The list price of the controller is \$4,995, with quantity discounts available.

*Custom Systems, 6850 Shady Oak Road, Eden Prairie, Minn. 55344.*

INNOVATIVE DATA  
TECHNOLOGY, INC.  
Magnetic tape subsystems

Innovative Data Technology, Inc. has introduced three ½-in. 9-track, 800/1600 byte/in. magnetic tape subsystems for the Small Computer Systems Interface (SCSI) Bus.

The tape subsystems, which boast IBM/Ansi/Ecma compatibility, use an intelligent controller embedded behind two of the tape transports and in a stand-alone 3½-in. chassis when used with the streaming recorder, the vendor said. Variable data block sizes are programmable in both the read and write mode up to a maximum of 32K bytes of buffer storage, the vendor said.

The magnetic tape subsystems feature full hardware and software compatibility with any host unit or other peripheral supporting the SCSI standard bus, the vendor said. In addition, the subsystems control up to four ½-in. Industry Standard Tape Transports, and all of the systems may use 7-, 8½- and 10½-in. standard reel sizes, the vendor said.

Other features include a tape-to-tape copy feature which can be implemented in the software, and over 40M bytes of data may be stored on a single 2,400-ft reel of tape, the vendor said.

Model TD1012/SCSI, which sells for \$4,550, supports 9 tracks and 1,600 bit/in. in the start/stop mode operating at 12.5 in./sec or 100 in./sec in streaming mode. The data transfer rate is 20K byte/sec in start/stop mode and 160K byte/sec in streaming mode, according to the vendor.

Model TD1050/SCSI costs \$5,150 and supports 7- or 9-track dual density 800 bit/in. and 1,600 bit/in. in start/stop mode operating at 45 in./sec. The data transfer rate is 72K byte/sec, the vendor said.

Model TD1750/SCSI sells for \$5,950 and supports 9-track dual density 800 bit/in. and 1,600 bit/in. in start/stop mode operating at 75 in./

sec. The data transfer rate is 120K byte/sec.

As options, rack enclosures, factory installation and maintenance contracts are available.

*Innovative Data Technology, P.O. Box 178160, 4060 Morena Blvd., San Diego, Calif. 92117.*

## TERMINALS

KIMTRON CORP.  
ABM 85H VT-52/100

Kimtron Corp. has introduced a terminal that reportedly emulates Digital Equipment Corp. VT-52/100 CRTs.

The ABM 85H VT-52/100 features green or amber characters, a 24-line

by 80-col. screen, 16 programmable function keys, programmable cursor, an RS-232 port, user-selected embedded attributes and four international character sets, the vendor said.

By using different programmable read-only memories, the terminal also reportedly emulates Televideo Systems, Inc. 920, 925 and 950 or Data General Corp. D100/200 terminals.

The terminal is priced at \$895.

*Kimtron Corp., 2225-I Martin Ave., Santa Clara, Calif. 95050.*

GOULD, INC.  
PC Workstation

Gould, Inc.'s Modicon Programmable Control Division has announced a documentation and drafting workstation said to be compatible with many

models of programmable controllers.

The PC Workstation includes a 16-bit processor and 512K bytes of program memory and a 16M-byte Winchester disk drive with a 5¼-in. floppy disk drive, the vendor said. The product reportedly provides text ladder diagrams and user-customized drafting for programmable controller equipment drawings.

The workstation also reportedly combines fully-formed graphics symbols with extensive commentary to produce high-resolution, informative displays.

The PC Workstation, including high-speed printer and software, is priced from \$21,000, according to the vendor.

*Gould's Modicon Programmable Control Division, P.O. Box 83-SVS, Andover, Mass. 01810.*

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## SYSTEMS &amp; PERIPHERALS

**PENTA SYSTEMS INTERNATIONAL, INC.**  
Pentavision enhancements

Penta Systems International, Inc. has announced enhancements for its electronic graphics terminal, Pentavision, designed for use by publishers, in-plant printing operations and commercial typesetters using Data General Corp. computer systems.

According to a company spokesman, the enhancements allow precise lineup of type in made-up pages in the computer-assisted page-makeup terminal.

Features include visual locks that align type to alternative positions beyond the normal locking, based on the line measure and the quadding specified during original input. It also is said to allow automatic con-

touring of text by tracing an outline of the desired shape on Pentavision's bit pad, use of electronic scissors for cutting the page into sections for output and justification of type by feathering between lines or elsewhere in the text.

The terminals cost \$33,995, according to the vendor.

*Penta Systems, 1511 Guilford Ave., Baltimore, Md. 21202.*

**KEY TRONIC CORP.**  
KB 100

Key Tronic Corp. has introduced KB 100, a plug-compatible replacement keyboard for the Digital Equipment Corp. VT100 CRT terminal.

The KB 100 is a low-profile keyboard requiring less vertical space than the terminal's original key-

board, the vendor said.

Additionally, the KB 100 is intended for heavy office use and incorporates a microprocessor and solid-state capacitive switches.

Cost of the plug-compatible replacement keyboard is \$379.

*Key Tronic, P.O. Box 14687, Spokane, Wash. 99214.*

**KIMTRON CORP.**  
KT-7

Kimtron Corp. has announced a video display terminal featuring what the company describes as an ergonomic design.

The KT-7 terminal reportedly features a tilt-and-swivel screen, height adjustability, a 12-in., nonglare green or amber screen, menu setups and user-selectable hidden or embedded

attributes. The menu setups, 20 programmable function keys with answer-back, are set from keyboard or host and stored in nonvolatile memory, according to the company.

The terminal is said to emulate the Televideo Systems, Inc. 920, 910 and 925 terminals and to offer code compatibility with the Televideo 924, 914 and 950. It reportedly can emulate other terminals with the addition of an optional programmable read-only memory.

The terminal is available now for \$595.

*Kimtron, 2225-I Martin Ave., Santa Clara, Calif. 95050.*

**DIGILOG, INC.**  
Remote Monitor Select Switch

The Network Control Division of Digilog, Inc. introduced the Remote Monitor Select Switch (RMSS), which reportedly allows users at a central location to monitor remote data circuits.

The system requires central and remote-site equipment. An Ascii terminal, master remote line monitor (RLM), data line monitor (DLM) and asynchronous modem are needed at the central site; the remote site requires a slave remote line monitor and RMSS. The Ascii terminal uses an RLM to monitor signal information. The signal causes RMSS to bridge the line so data traffic can be monitored by the DLM at the central site.

RMSS costs \$325, which includes cables.

*Digilog, 1370 Welsh Road, Montgomeryville, Pa. 18936.*

**INTECOLOR CORP.**  
Fastscreen

Intecolor Corp. has introduced a computer memory facility said to permit displays to be created on its E8001G color graphics terminal screen in one-quarter of a second.

Since it uses random-access memory, Fastscreen reportedly provides faster access to information than do conventional, flexible-media storage devices for process-control operations. Any of 63 different screens can be displayed on E8001G color graphics terminals equipped with single Fastscreen with 512K-byte storage. Up to 126 screens are available with dual Fastscreen, which provides more than 1M byte of storage.

Fastscreen is supplied on a printed-circuit board for use in the Intecolor card cage. The price for single Fastscreen is \$1,245; the dual version is \$2,450.

*Intecolor, Intecolor Drive, 225 Technology Park, Norcross, Ga. 30092.*

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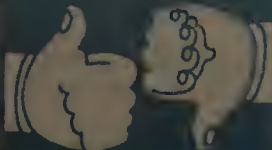
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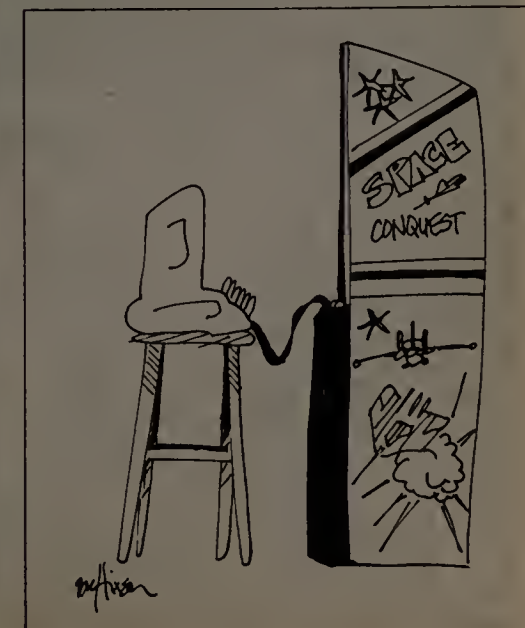
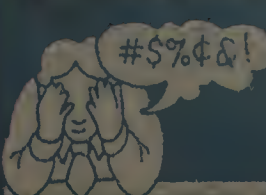
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## SYSTEMS &amp; PERIPHERALS

PRINTERS/  
PLOTTERSGOLD KEY  
ELECTRONICS, INC.  
Switchmate; Switchmate Jr.

Gold Key Electronics, Inc. (GKE) has announced the development of an intelligent printer switch for use with Digital Equipment Corp.'s LQP02 printer.

Switchmate reportedly al-

lows as many as three Decmate system users to share the functions of a printer without having to wait for current printer activity. The sharing can be suspended at any time and dedicated to a single Decmate.

The switch is attached by cable to the Decmate systems and the LQP02 printer. Also offered is the Switchmate Jr., which has a two-user capability.

The Switchmate retails for

\$749 and the Switchmate Jr. for \$499. Service and a warranty period are provided by the vendor.

GKE, P.O. Box 29, 735 Chestnut St., Manchester, N.H. 03105.

GRAPHICS  
SYSTEMS

## TENTIME

Graphics T/S service;  
Management Touch

Tentime has announced two services for Digital Equipment Corp. users: graphics time-sharing capabilities for DEC VAX-11 users and Management Touch, said to provide a DEC VT100 with touch-sensitive screen capabilities.

Using a California Computer Products, Inc. Model 1051 plotter, contour map-

ping, bar charts, pie charts and bubble charts reportedly can be produced under the graphics time-sharing service.

Graphics features include dc servomotor drive, continuous drum roll, four-color pen action and .25mm resolution.

Time-sharing costs are \$78/hour plus materials and a 15% surcharge on all materials, according to a vendor spokesman.

Management Touch consists of a touch-sensitive screen and logic board for \$1,095.

A yearly maintenance service is also available for \$150.

Tentime, 5375 Western Ave., Boulder, Colo. 80301.

## POWER SUPPLIES

COMPUTER POWER  
SOLUTIONS, INC.  
Electra-Guard

Computer Power Solutions, Inc. (CPSI) has expanded its line of electronic surge suppressors to include standby power supply systems.

The Electra-Guard standby power supply system comes in 200 Vac (optional 400 Vac) with an audible alarm and is sized approximately 6 by 11 by 13 in., a spokesman for the vendor said.

The unit itself is protected against line and battery fuses and has a low battery cutout to protect against potentially damaging overloads, according to the vendor spokesman.

Suggested retail starts at \$499.95 for the 200 Vac model.

CPSI, Suite 203, 8800 49th St. N., Pinellas Park, Fla. 33565.

TII ELECTRONICS, INC.  
GPM-PX

TII Electronics, Inc. has enhanced its programmable power line monitor with a feature said to direct programming of power line fault thresholds by a front-panel keyboard.

The feature reportedly allows the operator to pinpoint fault conditions and to track and identify, via printout, power line problems such as high-line voltage, low-line voltage, voltage spike and drop, power failure and high-frequency noise.

Other features of the enhanced product, called GPM-PX, include a summary of events and threshold-setting capability, an RS-232 output, a dc high/low monitoring capability and spike amplitude window detection.

GPM-PX costs \$1,950, the vendor said.

TII Electronics, 226 Terminal Road, East Setauket, N.Y. 11733.

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## SYSTEMS &amp; PERIPHERALS

**EDP POWER, INC.**  
**Survivor**

EDP Power, Inc. introduced the Survivor, a back-up power source for personal and small business computers.

The Survivor protects a computer from power flickers, power outages, line surges and brownouts, according to the vendor.

The product features automatic dc circuit breaker, two duplex outlets, a zero maintenance sealed battery and an automatic battery charger, the vendor said.

Three models provide 200, 400 or 1,000 watts of power and battery power that lasts 15 minutes or longer.

Prices for the Survivor back-up power source begin at \$600, the spokesman said.

*EDP Power, Suite 211, 1108A W. Devon Ave., Elk Grove Village, Ill. 60007.*

**EXIDE ELECTRONICS CORP.**  
**Power Distribution Module**

Exide Electronics Corp. has announced a line of power distribution systems for mainframe computers.

Exide's Power Distribution Module distributes and monitors power in a computer room, thus protecting it from voltage spikes, transients and other electrical surges, according to the vendor. The module has two options: metering and monitoring. The metering option displays output, voltage and other parameters, the vendor said. The monitoring module scans system parameters, stores 100 alarm conditions and provides printer or terminal interfaces, the vendor said.

The base system price starts at \$3,760, a model with the metering option is priced at \$4,800, and a module with the monitoring option costs \$8,170.

*Exide Electronics, P.O. Box 58189, Raleigh, N.C. 27658.*

**BOARD-LEVEL DEVICES****PRIVAC, INC.****Electro-Screen BT-1 2.0**

Privac, Inc. has announced enhancements to its Electro-Screen BT-1 graphics board, designed for SS-50 and SS-64 buses.

Electro-Screen BT-1 2.0 enhancements reportedly provide 19.2K bit/sec character equivalent throughput, two-dimension output with scaling capability and rotation in one-degree increments.

Electro-Screen BT-1, equipped with a 6809 microprocessor, provides bit-mapped, 512- by 480-pixel resolution and 84- by 48-line test display, the vendor said.

The enhanced graphics board is priced at \$795.

*Privac, 3711 S. George Mason Drive, Falls Church, Va. 22041.*

**MOTOROLA SEMICONDUCTOR PRODUCTS, INC.**  
**M68BSA1-1; M68BSA3; M68BSAC**

Motorola Semiconductor Products, Inc. has announced support of its MC68008, MC68010 and MC68451 chips with a real-time bus state analyzer (BSA) and two additions to its series of personality modules.

The additions include:

■ The M68BSA1-1 — An MC68000, MC68010 and MC68451 personality module. The M68BSA1-1 is a redesigned version of the vendor's MC68000 BSA1 personality module. The new product supports the MC68000 and expands its support to the MC68010 virtual memory microprocessing unit and the MC68451 main memory unit. It has two cable and probe/connector assemblies.

■ The M68BSA3 — An MC68008 personality module. It supports the MC68008 microprocessing unit and has a cable and probe/connector.

Both of these personality modules require a third offering, the M68BSAC BSA control module.

The personality modules function with three BSA trigger modes (continuous trace, sequential and window) and provide address (software) and discrete (hardware) histogram displays, the vendor said. Also, the BSA1-1 and the BSA3 modules reportedly provide matching support for the MC6800, 68008 and 68010 emulator modes that are used in the vendor's HDS-400 hardware development station. Combined with the HDS-400, the BSA can provide complex event break points — specified by up to seven events from 79 qualifier lines — on other than program instructions.

Pricing for the control module and two personality modules is: \$3,500 for the M68BSAC and \$1,650 each for the M68BSA1-1 and M68BSA3.

*Motorola, P.O. Box 20912, Phoenix, Ariz. 85036.*

**STD MICROSYSTEMS**  
**Models 5370A and 5380A**

STD Microsystems has announced two additions to its line of bus modules.

The Model 5370A is said to be a fully standard bus-compatible interface with Zilog, Inc.'s Z80 microprocessor.

The unit also offers a dual RS-232C serial interface. It contains two software programmable asynchronous or synchronous RS-232C serial channels with transmission rate selection and an optional crystal-referenced transmission rate oscillator, the vendor said.

The external RS-232C interface is configurable with data communications or terminal equipment and meets the requirements of RS-232C configuration F. The asynchronous configurations cost: \$175 for 2.5 MHz, \$200 for 4 MHz and \$235 for 6 MHz. The synchronous configurations cost: \$185 for 2.5 MHz, \$210 for 4 MHz and \$245 for the 6-MHz version, the vendor said.

Also unveiled was the Model 5380A Z80 dual parallel I/O module, also said to be STD-Z80 bus-compatible.

It reportedly provides four independent 8-bit I/O ports, two of which are capable of bidirectional I/O. The module has all bus signals fully buffered for minimum loading and maximum system expandability. The Model 5380A costs \$150 for 2.5 MHz, \$180 for 4 MHz and \$210 for the 6-MHz version.

The STD bus interrupt daisy chain is implemented on board both modules, reportedly allowing serial priority interrupt arbitration within modules of the system.

*STD Microsystems, 399 Sherman Ave., Palo Alto, Calif. 94306.*

**AUXILIARY EQUIPMENT****PERIPHERAL CONNECTIONS, INC.****E-Z-Reader**

Peripheral Connections, Inc. (Percon) has introduced a bar code reader called E-Z-Reader, which supports the two most prolific industrial bar codes, 39 and interleaved 205, according to the vendor.

Communications are standard via an RS-232C port. There is a beeper to indicate a good read. Operator feedback is available by two LED host-controlled status indicators and a low-frequency tone, the vendor said.

The vendor said the product was developed for the customer who wants to read dot matrix or medium-density printed labels and have operator feedback.

The E-Z-Reader costs \$395. An operating and installation manual is available for \$20.

*Percon, P.O. Box 1352, Eugene, Ore. 97440.*

**COMPUTRONICS LTD.****Forms Driver**

Computronics Ltd. introduced Forms Driver, which supports Prime Computer, Inc. Forms software for Televideo, Inc. 925 and 950 and Hazeltine Corp. Espirit III terminals.

Forms Driver supports five types of cursors: blinking block, steady block, blinking underline, steady underline and none, the vendor said. The software allows the user to se-

lect the type of cursor used with Forms and when Forms is exited. Forms Driver supports reverse video and blinking characters, according to the vendor.

Forms Driver is available for a one-time license fee of \$1,500 for each type of terminal.

*Computronics, 130 North Ash, Wood Dale, Ill. 60191.*

**SWITCHMASTER CORP.****VS controller**

Switchmaster Corp. has introduced a new control system for its line of IBM-compatible channel switches.

The VS controller includes specialized hardware and software to control a single channel switch as well as a network of channel switches.

The system reportedly allows up to 24 switches to be operated from a single CRT terminal.

The 880 series channel switch allows up to 16 strings of peripheral devices to be connected to as many as eight CPUs in any configuration, according to the vendor.

With the VS feature, the 880 can coexist in the same network with the previously announced 580 switch, the vendor said.

The switches range in price from \$61,000 to \$99,000.

The 880 switch reportedly includes the VS control system with a CRT terminal, but there is a charge of \$8,800 for the feature when installed on the smaller switches.

*Switchmaster, Suite 9, 25 Mitchell Blvd., San Rafael, Calif. 94903.*

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# MICROCOMPUTERS

## Micro tools called short of user needs

By Peter Bartollik  
CW Staff

PALM SPRINGS, Calif. — Microcomputer software is working some wonders in the corporate environment, but a lot more innovation is required, according to systems designers for four top U.S. corporations who spoke here recently.

Systems executives for General Electric Co., Bank of America Corp., McKesson Corp. and Aetna Life and Casualty Co. shared their expectations with information industry representatives attending Infocorp's 1984 Strategic Issues Conference.

"We've got to deliver real data to the user in terms that he can deal with it," according to Coby Dunn, vice-president of interactive corporate services for Bank of America.

Dunn said his centralized data processing functions serve 10,000 users worldwide, along with several thousand word processing users, from seven mainframes.

Projects currently under way at Bank of America's new End-User Computing Department are focusing on integrating personal computers into vertical markets and building an extract facility to enable users to extract the data they are demanding. "Users are trying to get data off systems that aren't designed to give data in that format," he said.

### Center of expertise

Jeffrey L. Ehrlich, manager of systems architecture with GE, said his department serves as the center of expertise for GE's 250 separate businesses and is responsible for distributing information, establishing policy and guidelines and major acquisition approval, among other functions.

Micro applications software has improved, and vendors are becoming more professional, he said, but several problems need to be resolved: "me-too products — we don't need a Dbase that is 10% faster"; unfinished products that don't perform to claims; overpriced software; and the perception that popularity equals quality. Ease of use is low on the list, he added. "The bottom line is getting the job done."

See EXECS page 84

## CPU links top wish list

In poll of IBM micro users

By Paul Gillin  
CW Staff

SAN JOSE, Calif. — Although most IBM Personal Computer users in large corporations believe their microcomputer acquisitions have been well worth the cost, they would like to see a faster machine and better provisions for connections to mainframes and other Personal Computers. Those are among the findings of a report released here recently by Strategic, Inc.

While most respondents said connections between Personal Computers and the mainframe and between individual Personal Computers are important, they indicated that no vendor yet deals effectively with both aspects of that communication. Most large users desire the connections to share expensive peripherals, programs and data, the survey said.

In order to deal with the problem, most users are actively considering purchasing a local-area network, the survey found. However, the report said no current local-area networks provide capabilities for efficient mainframe access, and most mainframes cannot function effectively as network controllers.

tively as network controllers.

About two-thirds of the large users employ IBM 3270 emulation to access other systems, while over 35% wanted to use the Personal Computer strictly as a terminal. Over one-third wanted to use both computer and terminal capabilities.

The report surveyed 70 larger companies that use both the Personal Computer and at least one mainframe system and 100 smaller companies that use at least one Personal Computer and some other minicomputer or microcomputer. All of the organizations used at least one IBM Personal Computer.

### Large users cite speed

Almost 90% of the large users stated that their Personal Computers allowed them to perform major applications faster; 83% said the micro improved work quality; and 88% said they had implemented applications that were not previously computerized.

However, 60% of the users indicated at least some interest in a faster version of the Personal Computer. Planned en-

See MICROS page 82

## IBM micro strategy outlined

SAN JOSE, Calif. — IBM's business-based Personal Computer product line, including the Personal Computer XT, 3270 Personal Computer and Personal Computer XT/370, will be significantly enhanced over the next two years and phased out entirely by 1987 in favor of much more powerful products. IBM will also settle on an expensive price umbrella, under which all other vendors will compete.

Those are among the predictions contained in a report on the Personal Computer market released recently by Strategic, Inc. The report predicted that the high-growth phase for Personal Computer products will end by 1986, after which IBM's products will settle into a comfort-

able 20% growth rate.

The IBM price umbrella will be larger and higher for future products, largely because IBM's Independent Business Unit, which originally designed the products, has been absorbed into IBM's Entry Systems Division and will now bear the burden of higher research and development overhead, the study said. However, increasing price/performance pressure from plug-compatible vendors and major competitors will force Big Blue to improve performance to avoid losing market share.

IBM's 3270 Personal Computer and XT/370 effectively have no competition, and the company still controls the large

See STRATEGY page 82



Docutel/Olivetti releases IBM Personal Computer-compatible micro/85



Datamension enhances Report Manager spreadsheet/93

### INSIDE

■ Toshiba bundles software into new micro/82

■ Appgen out for Microsoft Xenix/85

■ QDP multiuser micro runs Turbodos/87

■ Sharp APL runs on IBM Personal Computer/93

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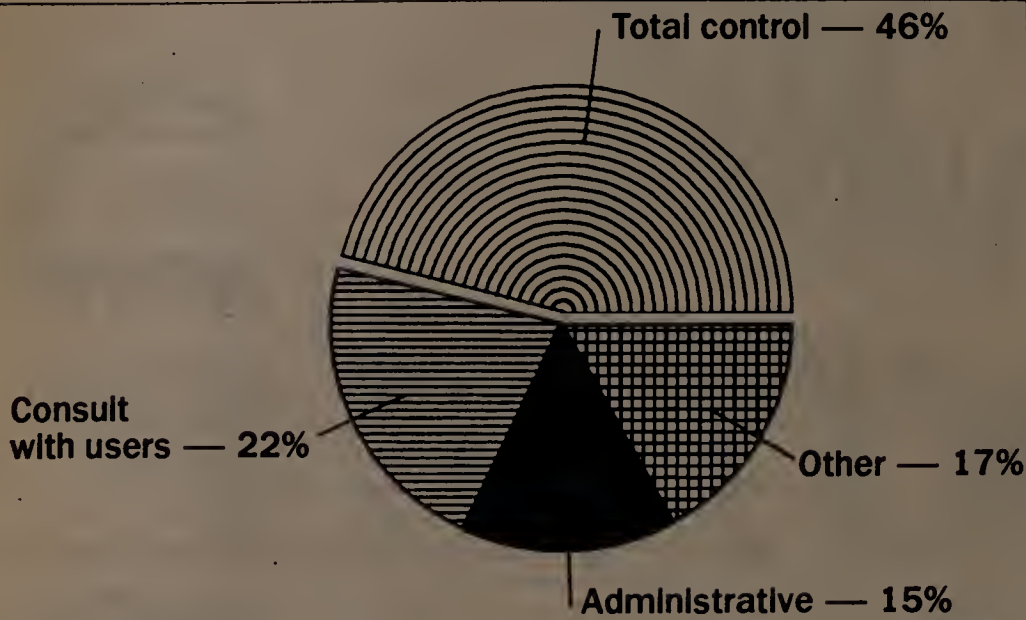
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## MICROCOMPUTERS



DP department control of IBM Personal Computer acquisitions

Source: Strategic, Inc.

## MICROS from page 81

hancements include better printers, enhanced memory, graphics plotters and communications hardware and software.

File sharing between Personal Computers was cited as a need by over 75% of the users. In addition, 85% of the large users share their IBM Personal Computers among two or more people. In most cases, a primary user kept the computer in an office and secondary users occasionally employed it.

Most of the users in either type of organization were middle-level managers, the report stated. In large companies, purchase, installation, training and service are handled mainly by the DP department. Large companies also tend to purchase more com-

plete systems than smaller companies, with over 70% of these configured with two floppy drives or 10M-byte disk drives. The report anticipated that over 60% of the large users who need access to central data files will install 10M bytes or more of hard disk capacity.

Twenty-five percent of the respondents cited spreadsheet analysis as their primary application. Financial applications and word processing were cited by about 15% of the large users.

Lotus Development Corp.'s Lotus 1-2-3 and Visicorp's Visicalc were the most popular application packages.

The report, "IBM PC User Reactions, Requirements and Plans — 1984," is priced at \$950.

Strategic, P.O. Box 9747, San Jose, Calif. 95157.

## STRATEGY from page 81

corporate market, the survey noted. Most competitors will be forced to compete in sales to smaller firms.

## Main push

IBM's main push in 1984 will be with the 3270 Personal Computer, which will be promoted in IBM MVS and VM operating environments. The XT/370 will be enhanced this year to allow it to interact more effectively with mainframe systems, the report predicted. A possible improvement to the 3270 Personal Computer would be a menu-driven IBM TSO interface. Future versions of IBM's 3274 terminal could include a network controller supporting networks of 3270 Personal Computers and XT/370 workstations, the study said. Future versions of the XT/370 will probably feature larger disks and peripherals, as well as better integration of the VM/PC operating system within IBM PC-DOS environments.

The XT/370 is a strategically important, but technically weak, product that is seriously hampered by its limits of 416K bytes of physical memory in 370 mode and maximum performance of .1 million instruction/sec, the report stated. There is little integration of the XT/370 with the host processor.

However, the XT/370 continues IBM's push to make the mainframe the center of the information processing system and represents an effort to establish IBM as a leader in the personal workstation arena, the survey noted.

## Toshiba unveils T300 updates

TUSTIN, Calif. — Toshiba America, Inc. has announced the enhancement of its 16-bit T300 Personal/Business Computer and its release as a system with bundled software.

The T300 Computing System reportedly features as software Microsoft, Inc.'s Multiplan and Softword Systems, Inc.'s Multimate. The standard system is said to include 192K bytes of random-access memory with an Intel Corp. 8088 microprocessor.

The enhancements reportedly include an option for Microsoft's MS-DOS operating system 2.0 Release 2.

The system is available for \$3,090. Toshiba America, Information Systems Division, 2441 Michelle Drive, Tustin, Calif. 92680.

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## MICROCOMPUTERS

# Arete Systems comes out with microcomputer

SAN JOSE, Calif. — Arete Systems Corp. has announced the Arete 1000 microcomputer. The high-performance system reportedly utilizes the strengths of various microprocessors to achieve performance levels of more than 2.8M instructions/sec.

According to a company spokesman, the microcomputer was developed in response to marketing research that found most high-end computer companies provide more hardware than is effectively utilized within the system. That excess hardware increases cost and lowers reliability.

Three separate buses implement the Arete 1000 architecture. Up to four Motorola, Inc. 68000 microprocessors share a common main memory, which may be as physically large as 16M bytes. Main memory is accessed via a 32-bit processor memory bus. With the system's tightly coupled CPUs, the Arete 1000 achieves extremely rapid dynamic load leveling between processors,

the vendor said.

The system is able to store and retrieve large amounts of data on as many as 60 terminals simultaneously from a common data base. The Arete 1000 is thus able to perform large jobs that have always been reserved for large minicomputers and small mainframes, the vendor claimed.

Mass storage is provided by an 80M- or 160M-byte Winchester technology Fujitsu Ltd. disk drive and an Archive Corp. 45M-byte streaming cartridge tape drive. To deal with the problem of fault tolerance, there is 100% redundancy in all electromechanical systems. Components such as the

CPUs, less prone to failure, are not duplicated, the vendor said.

Prices range from \$46,950 for the Model 1114, which includes one 68000 CPU, 16 serial ports, 2M bytes of random-access memory, 180M bytes of hard disk memory and 48M bytes on a streaming tape. A larger 1200 series

unit costs \$102,450. Model 1200 configurations include four 6800 CPUs, 60M bytes of random-access memory, 64 serial ports, 320M bytes of hard disk memory and 48M bytes on a streaming tape, the vendor said.

*Arete Systems, 2040 Hartog Drive, San Jose, Calif. 95131.*

## EXECS from page 81

At McKesson's divisions, according to Charles C. Hoerner, manager of office systems in the Information Services Division, similar problems exist as at GE and Bank of America. Additionally, he said, "Very often what [users] ask us for is not really what they need . . . [and] the tools that are introduced into the equation redefine the needs."

J. Curtis Roberts, director of systems architecture with Aetna, said that by the end of the decade his company expects to have some type of terminal on the desk of each of its 56,000 employees.

Before that can happen, Roberts said, it is necessary to meet several needs: communications innovations and standards to handle document interchange between personal computers and workstations "so the Personal Computer on my desk can look at and manipulate the document my secretary prepared on her workstation"; inexpensive and easy-to-install local-area networks for micro-to-micro file sharing and peripheral sharing; ease of use; multitasking of basic everyday applications; integrated software; and interfaces to mainframe host software.

All four executives said their companies have arranged for some type of discount program for employees to purchase micros for personal use. The day Bank of America announced the discount program, Dunn said, 1,100 orders were placed by employees.

## NCR COMTEN INTRODUCES ITS NEW 9600 BPS MODEM. BRILLIANCE RUNS IN THE FAMILY.





## MICROCOMPUTERS



Olivetti portable computer

# Olivetti unwraps IBM-compatible micros

IRVING, Texas — Docutel/Olivetti Corp. has announced portable and desktop personal computers that are compatible with IBM Personal Computers.

The Olivetti personal computer is available in three desktop versions and two portable versions. The systems reportedly include vid-

eo displays, detached keyboards and bundled tutorial and application software.

According to a spokesman, the products are capable of running most popular business applications software written for the IBM Personal Computer and use Intel Corp. 8088 microprocessors and the IBM PC-DOS operating

system. They reportedly also can run on several other operating systems.

They are said to feature 12-in. green monochrome screens in the desktop models and 9-in. screens in the portable versions, with 640-by 325-pixel displays, reverse video, underlining, blinking and two levels of

character intensity.

The standard versions, the DT-1 and P-1, are said to feature 128K bytes of memory and a single 320K-byte floppy disk drive. Models DT-2 and P-2 are said to include an additional floppy disk drive, while the desktop model, DT-HD, contains a floppy disk drive and a 10M-byte hard disk system.

The computers feature the vendor's Ram Disk, on which random-access memory can be isolated to function as an electronic disk drive for quick access.

The systems reportedly include built-in serial and parallel ports, internal disk drive controllers and video display interfaces.

Bundled application software is said to include Micropro International Corp.'s Wordstar word processing system, Infostar data base system and Calcstar spreadsheet program.

Suggested retail prices are \$2,895 for the DT-1 and P-1, \$3,295 for the DT-2 and PT-2 and \$4,995 for the DT/HD.

Docutel/Olivetti, Office Products Division, 106 Decker St., Irving, Texas, 75062.

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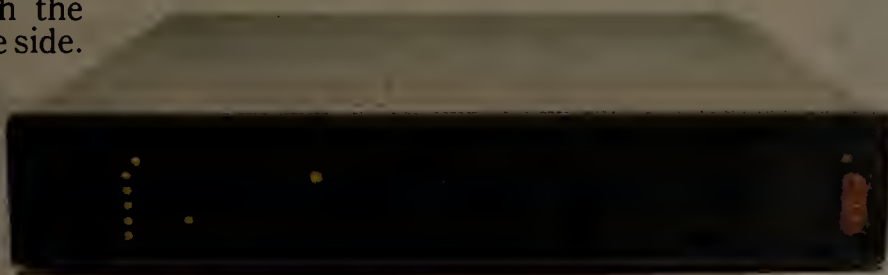
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## 'Appgen' fits Xenix

HOUSTON — The Software Express, Inc. has announced a version of its Appgen applications generator package designed for use with Microsoft Corp.'s Xenix microcomputer operating system.

The Appgen applications generator is said to develop bug-free, self-documenting software and modify existing software to meet user needs. Appgen reportedly prompts the user through a series of English-language instructions, employing a menu-driven system that enables nontechnical programmers to develop applications packages.

The Xenix operating system, according to a spokesman, is compatible with most industry-standard microprocessors, including the Intel Corp. 8088, the Zilog, Inc. Z8000 and the Motorola, Inc. 68000. The Xenix version of Appgen is priced at \$6,000.

The Software Express, Suite 220, 10103 Fondren, Houston, Texas 77096.





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## MICROCOMPUTERS

## SYSTEMS

QDP COMPUTER SYSTEMS  
QDP-400

QDP Computer Systems has announced the QDP-400 multiuser system based on Software 2000's Turbo DOS operating system and designed for increased system throughput.

The system features a standard 6 MHz Zilog, Inc. Z80B CPU for its master CPU and a Z80A CPU for each of the two to five individual slave CPUs, the vendor said. The QDP-400 master CPU has up to 256K bytes of random-access memory available, with 128K bytes for each of the user workstations.

The system is compatible with Digital Research, Inc.'s CP/M and MP/M operating systems and offers Turbo DOS memory and disk management and, when combined with QDP's bank-switched memory, provides more user storage, fast buffering and faster loading of programs and files, the vendor said.

Its configuration program allows the QDP-400 system to be used with most terminals, printers or modems. The system also features over 30M bytes of Winchester hard disk storage and a 1.2M-byte, 8-in. floppy disk with programmable drive shutoff, the vendor said.

Advanced QDP system features include an on-line Help program, a menu program, a hard disk format, system status and a hard disk diagnostic program, according to the vendor.

Prices for the system start at \$9,995.

QDP, 10330 Brecksville Road, Cleveland, Ohio 44141.

ALPHA MERICS CORP.  
Datscribe 5

Alpha Merics Corp. has introduced the Datscribe 5, a microcomputer-based drafting system.

Datscribe 5 replaces the Datscribe IV and features an interface that supports both RS-232C and IEEE-488 protocols.

With the interface, the Datscribe 5 can be used as a stand-alone, keyboard-driven system for applying lettering or symboling to drawings or as a computer plotter, according to the vendor.

Also included in the product is a software emulation program that makes the Datscribe 5 compatible with application programs written to drive Hewlett-Packard plotters, the vendor said.

According to the vendor, the product can expedite preparation of schedules, charts, posters, formats, signs, parts lists, simple schematic diagrams and view graphs.

Datscribe weighs 29 lb and has a printing area of 18 in. by 39 in. Character heights are adjustable from 1/16 in. to 3/4 in.

According to the vendor, users without computer-aided design (CAD) systems would be able to upgrade to any CAD system at any time.

Customers with CAD systems gain the benefits of a stand-alone Datscribe system and the advantages of a high-quality, low-cost flat-bed plotter, a company spokesman said.

The suggested retail price of Datscribe 5 is \$8,450.

Alpha Merics, 20931 Nordhoff St., Chatsworth, Calif. 91311.

APPLIED INSTRUMENTATION  
CORP.  
Scout

Applied Instrumentation Corp. (AIC) has announced a stand-alone field microcomputer that measures hydrological, geotechnical and meteorological variables.

The Scout is a compact, battery-operated (three-month life span/battery) micro capable of storing approximately three months' worth of stand-alone measurements, recordings and control of multiple sensors. For example, a standard Scout with three sensors each recording every half hour and having 12K bytes of random-access memory (RAM) would record 48 sample/day on each sensor. At this rate, it would take 40 days to fill the RAM, a spokesman said. After

expanding the same system to 56K bytes of RAM, it would take 200 days to fill the memory.

The Scout runs on the vendor's proprietary operating system and comes with 64K bytes of memory and up to four sensor interface cards, which support multiple channels of 4- to 20-mA current loop, 5V single-ended and mV differential, as well as digital I/O and supply sensor power. It has built-in RS-232C and current loop serial interfaces. All electronics are housed in one sealed enclosure and operate over a temperature range of -25 C to 85 C.

The user communicates with the Scout via any compatible hand-held terminal, and the cassette tapes are compatible with the Apple Computer, Inc., Apple II or IBM Personal Computer.

The Scout package, which includes the first interface card, a terminal and audio cassette, costs \$2,950.

AIC, P.O. Box F195-168, Blaine, Wash. 98230.

CMA MICROCOMPUTER  
Computerized bulletin board

CMA Microcomputer has announced a computerized bulletin board service.

The service will allow users to share information, resolve problems and receive updated versions of the firm's applications packages, the vendor said.

Upon installation of the service, the vendor's Technical Center will be open to service users 24 hours a day during the business week. Users who

Continued on page 88

# Large systems hardware is not an impulse buy.



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## MICROCOMPUTERS

Continued from page 87

are unable to call during regular business hours will be able to dial the service and leave a message for a technician. The technician will then prepare an answer or solution for the user and leave it on the message service. The service allows users to pick up updates when available or recover files which may have been lost due to hardware failures, the vendor said.

The extended service is free to users of the company's applications packages, which range in price from \$49.95 to \$1,700.

CMA Microcomputer,

55722 Santa Fe Trail, Yucca Valley, Calif. 92284.

### VISION-80 PTY., LTD. Five products for Apple II and IIe personal computers

Vision-80 Propriety, Ltd. has announced a series of five products for Apple Computer, Inc. Apple II and Apple IIe personal computers.

The Vision-80 circuit board plugs into the Apple motherboard, allowing a display of 80 columns of text with applications such as word processing, terminal emulation, data base and electronic spreadsheet, the vendor said. It costs \$195.

The Vision 128/256 memory expansion card is said to be fully buffered with low power consumption and capable of replacing the 16K-byte random-access memory card used in many Apple IIs. It costs \$295.

The Vision-VCE is a pre-boot disk for use with the Vision-80 board, allowing the user to see 80 columns of display with Visicorp's Visicalc. It costs \$69.

Vision-AWII is said to be a preboot disk for Apple's Applewriter II word processing program, providing an 80-col. display when used in conjunction with the Vision-80 board. It costs \$69.

The Vision-128 utility disk reportedly contains a variety of utility programs designed to take advantage of the extra memory of the Vision-128. It costs \$79.

The products are available now through Vision-80 Pty., Ltd.'s U.S. distributor, Action Research Northwest.

Action Research Northwest, 11442 Marine View Drive S.W., Seattle, Wash. 98146.

### NEC HOME ELECTRONICS, INC. New PC-8800 prices

NEC Home Electronics, Inc. has announced new bundled prices on its PC-8800 8- and 16-bit desktop personal computer systems.

The Smart Small Business package sells for \$1,999 and the Middle Manager package for \$2,499.

The first package features the PC-8801 8-bit CPU and keyboard with 64K bytes of random-access memory (RAM), the PC-8831 5¼-in., 640K-byte dual disk drive and the following 8-bit software: Wordstar and Mail Merge by Micropro International Corp.; Microsoft, Inc.'s Multiplan; Digital Research, Inc.'s CP/M 2.2; and two Microsoft Basic programming languages.

The Middle Manager package includes the PC-8801 8-bit CPU and keyboard with 64K bytes of RAM, as well as the PC-8801A-16 16-bit card with 128K bytes of RAM and Microsoft's MS-DOS operating system, the PC-8831 5¼-in., 640K-byte, dual disk drive and the same software as the Smart Small Business package.

According to the vendor, both packages are available with an 8-in., 2M-byte dual disk drive for an additional \$800.

The PC-8800 system features high-resolution monochrome (640 by 400 pixels) and color (640 by 400 pixels) graphics. The detachable keyboard features a numeric key pad, five user-programmable function keys supporting 10 different functions and editing keys.

NEC Home Electronics, 1401 Estes Ave., Elk Grove Village, Ill. 60007.

### CLM/SYSTEMS, INC. Unifier System

CLM/Systems, Inc. has announced the Unifier System, which is said to be a computer system for civil engineering, surveying, mapping, construction and utility organizations.

The multiuser, multitasking system includes a Sage Computer Technology Sage Super Microprocessor with 1M byte of random-access memory, an 18M-byte hard disk, floppy disk, two to four graphics terminals/workstations, multimode printer, plotter and interactive digitizer, according to the vendor.

Software, including an operating system, data base manager, word processor, spreadsheet, utilities and the complete CLM Cogo applications software package, is provided with the Unifier System.

The Unifier System costs under \$25,000.

CLM/Systems, 3654 Gandy Blvd., Tampa, Fla. 33611.

### DATA TECHNOLOGIES INDUSTRIES Assistant CP/e

Data Technologies Industries has announced Assistant CP/e, an Apple Computer, Inc. Apple IIe-compatible

Continued on page 90

## PROFESSIONALISM IS A COMMITMENT CERTIFICATION IS THE TEST

The 23rd Annual Examination for the **CERTIFICATE IN DATA PROCESSING (CDP)** has been scheduled for Saturday, May 5, 1984, at test centers throughout the world. Offered by the Institute for Certification of Computer Professionals (ICCP), the CDP certification program is directed primarily at business-oriented data processing people at the management and supervisory level.

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Continued from page 88

microcomputer which can also run programs written for Digital Research, Inc.'s CP/M operating system.

The product features Zilog, Inc. Z80 and MOS Technologies, Inc. 6502 microprocessors, 64K bytes of random-access memory, a single-side, single-density disk drive, 14-lb weight, a monochrome monitor with 280- by 192-pixel resolution and a Centronics Data Computer Corp. parallel port. The microcomputer will bundle word processing and personal management software.

Assistant CP/e costs \$1,595, a spokesman said.

*Data Technology Industries, 701-A Whitney St., San Leandro, Calif. 94577.*

## STORAGE

### AMDEK CORP. AMDC-I; AMDC-II

Amdek Corp. has introduced two 3-in., microfloppy disk drive systems compatible with Atari, Inc. 400, 800 and XL series computers.

The AMDC-I, a single drive, provides up to 180K bytes of double-density, on-line formatted storage capacity.

The AMDC-II, a dual-drive, offers up to 360K bytes of double-density storage per side. The full capacity can be accessed by the user manually flipping it over, the vendor said.

According to the vendor, both units have an integral intelligent controller that is compatible with the Atari microcomputers.

Both units control up to four disk drives, each programmable for single- or double-density operation. The controller includes an Atari-compatible printer/plotter port.

According to the vendor, the two units may be used in conjunction with a 5¼-in. disk drive for Atari-compatible software.

The suggested retail price for the AMDC-I is \$599; the AMDC-II is \$850. The 3-in., double-sided cartridge is priced at \$6.99.

*Amdek, 2201 Lively Blvd., Elk Grove Village, Ill. 60007.*

### WINCHESTER SYSTEMS, INC. Datasafe-8; MDS-256

Winchester Systems, Inc. has announced an 8M-byte Winchester disk system for the Intel Corp. Intellec Series II and III and the Mohawk Data Sciences Corp. MDS-800 microprocessor development system. It is said to be compatible with Intellec's operating system, Isis-II.

The Datasafe-8, based on a 5¼-in. disk drive, reportedly provides twice the system throughput of floppy drives. With 5M bytes of formatted storage capacity, the hard disk system has 39,168 blocks allocated in two directories.

The system offers a data transfer rate of 625K byte/sec with an average access time of 85msec. Drive mean time between failures is rated at 11,000 hours. Power consumption is 120W at 115/230 Vac line voltage. The Zilog, Inc. Z80-based controller includes 32-bit error-correction code with 11-bit burst error correction, the vendor said.

A print spooler option allows printing while programming, the vendor said. Its 256K-byte buffer holds about 60 to 80 pages.

Datasafe-8 costs \$4,995 and has a one-year warranty. The MDS-256 print spooler option costs \$1,250, also with one-year warranty, the vendor said.

*Winchester Systems, P.O. Box 545, 14 Laurel Hill, Winchester, Mass. 01890.*

## BOARD-LEVEL DEVICES

### ADVANCED MICRO DEVICES, INC.

Am94/2000; Am94/1530; Am94/1541

Advanced Micro Devices, Inc. has introduced a Multibus-compatible

Continued on page 92

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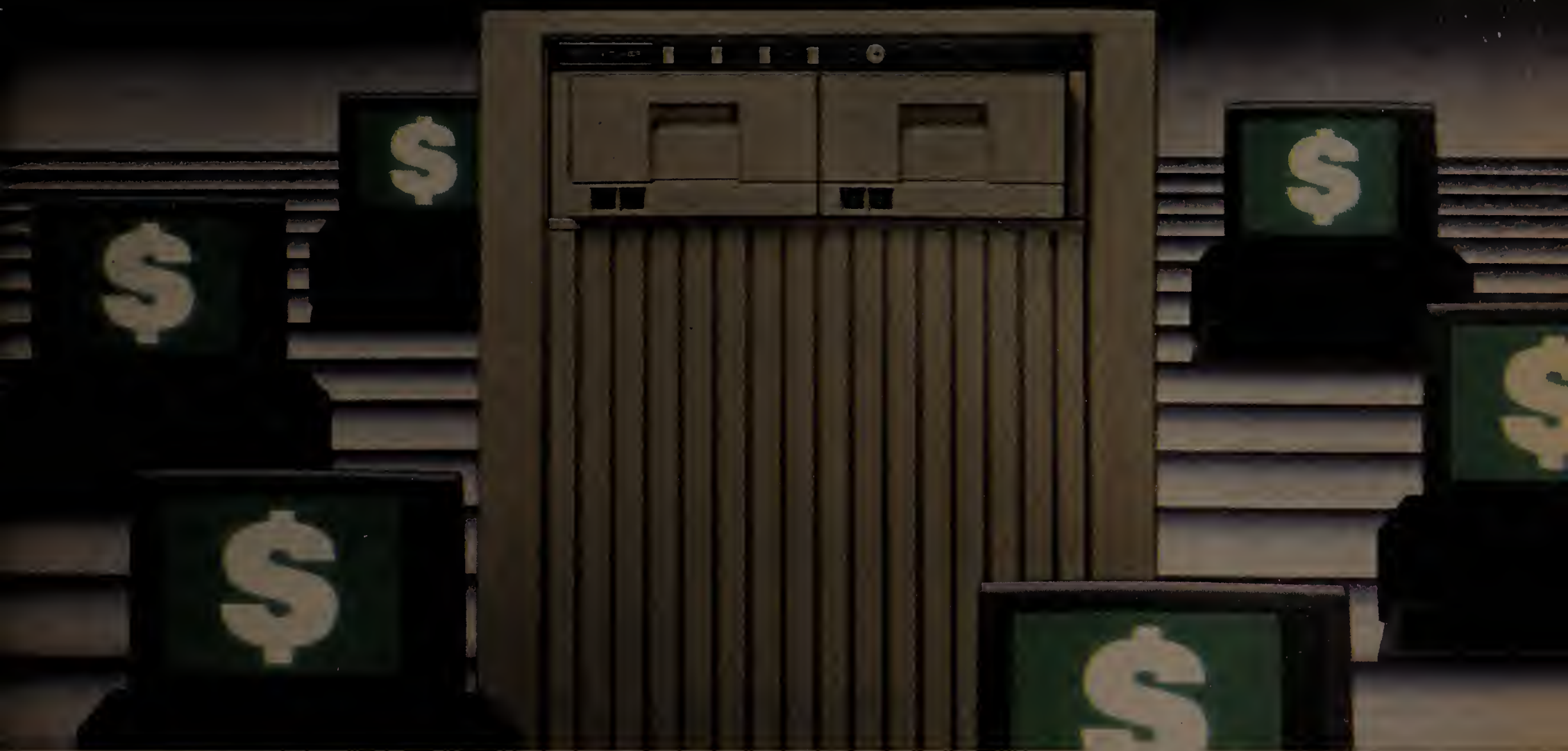
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\*\*UNIX is a trademark of Bell Laboratories.

# PERKIN-ELMER

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## MICROCOMPUTERS

Continued from page 90

SBX motherboard with six SBX connectors, as well as two SBX modules — a stepper-motor controller and a dual-channel serial communications controller.

The Am94/2000 motherboard's six SBX connectors provide support for single- and double-width modules not requiring direct-memory access. The motherboard also includes on-board Intel Corp. Multibus address decoding and data buffering and Multibus/SBX timing reconciliation, as well as two of the firm's Am8259A programmable interrupt controllers. The on-board SBX connectors can handle any 8- or 16-bit SBX module and provide for up to six single-width modules, one double-width and four single-width modules or two double-width and two single-width modules, the vendor said.

The Am94/1530 is a programmable dual-channel serial communications module. Enabling the designer to add incremental I/O capability to a Multibus system, the unit adds two RS-232C serial channels to any host board that includes an SBX bus-compatible connector.

Incorporating the Z8530 serial communications controller, the Am94/1530 module handles a variety of communication formats, including asynchronous, binary synchronous, IBM High-Level Data Link Control and Synchronous Data Link Control protocols, the vendor said.

The Am94/1541 stepper motor controller is a programmable, single-width SBX module. Through its on-board 8-bit microcontroller integrated circuit, it can drive one four-phase stepper motor via either a program stored in the microcontroller or commands sent from the CPU board. A line is provided for an external clock to synchronize several Am94/1541s so that multiple stepper motors can be controlled synchronously. Also included in the module are buffered lines for external feedback from the devices controlled by the Am94/1541.

The single-quantity price of the Am94/2000 SBX motherboard is \$495, while both the Am94/1530 dual-channel serial communications module and the Am94/1541 stepper motor controller cost \$395 each.

Advanced Micro Devices, 901 Thompson Place, Sunnyvale, Calif. 94086.

#### MICROTEK, INC. Price reductions

Microtek, Inc. has reduced the prices of its entire line of add-on products for Apple Computer, Inc. microcomputers.

Among the reduced products is a 128K-bit memory card, formerly \$479, now

available with Digital Research, Inc.'s CP/M operating system and Pascal enhancement diskettes for \$299. The Q-Disc, a 128K-bit, solid-state disk emulation card supplied with CP/M and Pascal enhancement disks, VisiCorp's Visicalc spreadsheet program expansion software and Artsci's Magicalc spreadsheet program, has been reduced from \$529 to \$399.

In addition, the Dumping-GX graphics printer card

now costs \$89.95, down from \$175. A complete pricing schedule is available from the company.

Microtek, 4750 Viewridge Ave., San Diego, Calif. 92123.

#### PROFIT SYSTEMS, INC. Multigraph

Profit Systems, Inc. has announced the Multigraph board, a graphics board for the IBM Personal Computer.

The board works with either monochrome or color monitors. It features soft scrolling, 720- by 350-pixel resolution, 32K bytes of random-access memory and flicker-free scrolling, according to the vendor. The board runs software written for an IBM color board without requiring a color monitor. An option allows the use of a 132-col. monitor.

The board costs \$499.

Profit Systems, P.O. Box

1039, Berkley, Mich. 48072.

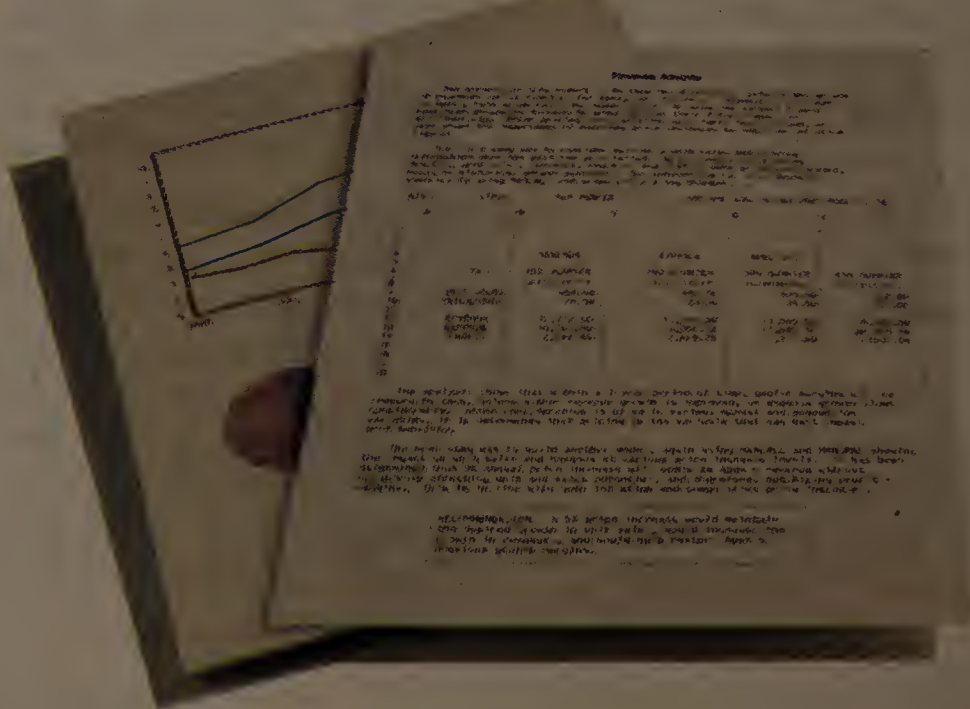
#### AUXILIARY EQUIPMENT

#### COMPUCABLE CORP. IBM micro screen

Compucable Corp. has announced an enhancement screen for the IBM Personal Computer.

The screen enhances char-

# NEW FROM CINCOM: THE MANAGE USER SERIES™ MAINFRAME PERSONAL COMPUTING POWER WITH DP CONTROL.





## MICROCOMPUTERS

acter display and eliminates reflection and glare, according to the vendor. The screen's material consists of woven, black, optical-fiber mesh. The screen is housed in a polycarbonate frame, which reportedly eliminates electronic shock. A foam gasket around the frame holds the screen in place, while a pull tab on the frame's bottom is used for removing the screen.

The product costs \$24.95.

*Compucable Corp., Suite 6-J, 1440 South State College Blvd., Anaheim, Calif. 92806.*

## MICRO SOFTWARE

DATAMENSION CORP.  
Report Manager

Datamension Corp. has announced a new release of Report Manager, a three-dimen-

sional, programmable spreadsheet for the IBM Personal Computer.

Enhancements exchange data between Report Manager and other software packages; sort columns, rows or pages; expand local and global formatting; support color monitors; and use full-word command prompts, according to the vendor. Twelve exec program statements and 11 additional preprogrammed functions have been added to

the program, the vendor said. Reportedly, files created with the first version of the program are compatible with the latest release.

Report Manager costs \$495.

*Datamension, 615 Academy Drive, Northbrook, Ill. 60062.*

I.P. SHARP ASSOCIATES LTD.  
Sharp APL/PC

I.P. Sharp Associates Ltd. recently announced the implementation of its Sharp APL development language in a package for the IBM Personal Computer.

Sharp APL/PC, according to a company spokesman, is compatible with Sharp's mainframe software products. The package reportedly incorporates all features of Sharp APL for mainframes.

The package for the Personal Computer runs as a user program under IBM PC-DOS operating system Versions 1.1 or 2.0. It includes the interpreter, file system, session manager, several auxiliary processors and utility software. Auxiliary processors reportedly provide access to the operating system, DOS files, asynchronous communications, the parallel printer and a full screen manager.

The package, including diskettes containing Sharp APL/PC and utility programs, APL stickers for the Personal Computer key buttons and manuals, costs \$375 and will be available in the first quarter of this year. An APL-character read-only memory, enabling the Personal Computer to display APL characters, costs \$25. A Sharp APL package for the IBM XT/370 will be available in the third quarter of 1984.

*I.P. Sharp Associates, Suite 1900, 2 First Canadian Place, Toronto, Ont., Canada, M5X 1E3.*

SOFTWARE DIGEST, INC.  
Software ratings

Software Digest, Inc. has announced the availability of a newsletter that rates IBM Personal Computer software.

Programs are tested by 10 evaluators, then scored to produce ratings on each. Word processing program testing has been completed. Data base management systems and graphics programs are planned in the near future, the vendor said.

Newsletter rates range from \$90 for a six-month trial series to \$240 for a two-year subscription.

*Software Digest, 1 Wynnewood Road, Wynnewood, Pa. 19096.*

## MANAGE USER SERIES

Cincom's new MANAGE USER SERIES™ combines the benefits of personal computing capability, mainframe power and greater data processing control into one comprehensive Decision Support System.

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corporate files, or build models based on private data as well.

- MANTIS is Cincom's industry acclaimed application development language. As the "integrator" of the MANAGE USER SERIES, MANTIS provides an effective bridge between the Development Center and the Information Center.

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# COMPUTER INDUSTRY

## DEC airs rise in earnings After five quarters of decline

MAYNARD, Mass. — After five straight reports of declining earnings, Digital Equipment Corp. will announce today that earnings for the second quarter ended Dec. 31 exceeded results from the same period one year ago.

The company issued a preliminary report Jan. 13 which indicated that, prior to an audit review, earnings for the quarter would fall between \$1.20 and \$1.45, compared with the \$1.08 figure of the corresponding quarter one year earlier. One financial analyst told *Computerworld* that part of the improved earnings may be attributed to increases in personal computer shipments and shipments of other equipment that were delayed during the first quarter of the present fiscal year.

Beginning in October 1982, the company disappointed the stock market with the first of five successive quarterly reports showing reduced earnings in comparison to year-earlier results. The disappointment culminated in last October's announcement that first-quarter earnings

had plunged 72% to a dismal \$15.9 million, or 28 cents per share [CW, Oct. 24, 31]. The first-quarter shortfall was linked by the company to lower than expected shipments of personal computers, delayed shipments of high-end peripherals and administrative problems.

The second quarter figures are significantly higher than had been predicted by Wall Street analysts, who had forecast earnings ranging from 28 cents per share to 90 cents per share.

DEC officials would not comment in detail on the unofficial results, but Alfred M. Bertocchi, vice-president for finance and administration, said the company had experienced strong customer demand for its VAX-11/780 superminicomputers, Micro-PDP-11s, personal computers and office products.

Stephen K. Smith, an analyst who follows the company for Paine Webber Mitchell Hutchins, said the DEC announcement was certainly a good surprise, even if it

See DEC page 96

**digital**

## Intel, AMD semi sales booming

With recent announcements of its quarterly sales and earnings, Intel Corp. joined the \$1 billion-plus vendor group, and Advanced Micro Devices, Inc. (AMD) continued its strong expansion, as semiconductor sales boomed.

Santa Clara, Calif.-based Intel closed out its fourth quarter and fiscal year posting sales of \$1.1 billion, a 25% jump over 1982's annual total and the first time the company surpassed the \$1 billion sales level. Intel's profit for the year increased threefold to \$116 million or \$1.05 per share, compared with earnings of \$30 million or 32 cents per share, last year.

For the fourth quarter, Intel's sales climbed 39% to \$332 million, compared with \$239 million the same period a year earlier. Profit in the quarter was \$47 million or 40 cents per share, 40% of the com-

pany's total profit for the year.

Commenting on Intel's performance, Gordon E. Moore, chairman and chief executive officer, said, "Our business outlook for 1984 is very strong, as the deluge of orders that hit us last June shows no sign of abating."

Quarterly sales and profit at AMD, for the company's third quarter, again surpassed previous highs. Sales totaled \$154 million, 69% greater than the same period last year. Profit for the Sunnyvale, Calif., firm totaled \$20 million or 35 cents per share, a better than threefold increase over the third quarter of last year.

Like other semiconductor companies reporting financial results in recent weeks, AMD reported record-setting research and development spending and lengthy order

See PROFITS page 103

## IBM/Unix foster speculation

### INDUSTRY INSIGHT

BILL LABERIS

While it came as no great surprise, IBM's announcement of Unix support on its Personal Computer line has fostered divergent speculation on just what the announcement means — to IBM, AT&T and the user community at large.

On the face of it, it looks as though, with widespread Unix acceptance, IBM could in time find itself in the pitiful position of its plug-compatible manufacturers, namely, at the mercy of AT&T-launched updates of the operating system, particularly as its usage proliferates among larger systems. If anyone knows the market power of the company holding the keys to the instruction set, it is IBM.

So why get behind the eight ball? The answer is that IBM has not, and it may, in fact, end up looking a lot rosier than AT&T in the Unix game.

### Welcomed relief

For one thing, IBM's endorsement of Unix, albeit token, will come as a welcomed relief to the growing legions of Unix aficionados. Their numbers are relatively small now, but bear in mind that Bell Laboratories has made Unix a fairly cheap tool for university use. According to International Data Corp., 90% of computer science majors in the U.S. (50% in Europe) have been exposed to Unix as a result.

Judging from comments passed at last fall's meeting of the Association of Data Processing Management Organizations, Inc., there is some animosity in both the Unix user and the third-party vendor communities toward AT&T, animosity that could work to IBM's great favor now.

Speaking at the meeting were the current and future heads of the Unix users group. Bob Marsh, chairman of Plexus Computers, Inc., claimed that AT&T has been an obstructionist force in the move-

See IBM page 96



Texas instruments is sitting atop the merchant semiconductor heap/103

**MCI**

Earnings are flat but capital spending is booming at MCI/98

### INSIDE

■ Does IBM have two standards of industry conduct?/97

■ A rainbow coalition of industry groups is attacking some taxing problems/98

■ Erasable optical disks are on the way, but will take a few years getting here/100

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■ Things looking up at Honeywell/101

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## COMPUTER INDUSTRY

**IBM** from page 95

ment to promote Unix as an industry standard. In fact, the old Western Electric did not support Unix a year ago. In particular, Marsh knocked what he considered AT&T's onerous Unix licensing fees — in the neighborhood of \$43,000 for the first copy and another \$25,000 or so for redistribution rights.

**'Enlightened view' urged**

IBM's Unix endorsement "would be more valued," Marsh said at that time, adding that it was "just an accident" that AT&T owns the Unix rights. Both he and Mike Florio, also from the users group, called upon AT&T to adopt a more "enlightened view" toward Unix development. Each, however, doubted he would get what he wanted from AT&T in the near future.

But as a standard-bearer, IBM is second to none, even if the product is not IBM's to start with. The chances are good for those disenchanted with AT&T's Unix position that IBM will appear as a white knight, doing for the marketing of Unix as a standard what they say AT&T would not.

Meanwhile, IBM is not about to get locked into a Unix world of its own making. While IBM's endorsement will make third-party Unix vendors very happy, IBM doubtless has proprietary operating systems plans of

its own for its low- and mid-range multiuser systems of the future. In the absence of any AT&T presence in the systems market at this time, IBM still calls the tune for the third-party software developers.

Most likely, IBM will gather as much of the Unix market as it can, particularly as it bolsters its thrust into the automated office, while trying to control the pace of Unix acceptance by keeping the third-party software vendors and the user community occupied with other systems.

The General Electric Co. high-tech rumor mill was working overtime again this month, this time piping sounds that the cash-rich giant was considering buying none other than Digital Equipment Corp. The result, of course, was an upward spike in

DEC's stock price, boosted even further by the good financial news from the No. 2 computer maker.

The fact is, given the approximately \$5 billion in cash and liquid securities now hoarded by GE, the company can afford any U.S. computer company but one, IBM. The fact is, that DEC is but one of a string of companies named in recent months as possible takeover candidates.

Add Hewlett-Packard Co., Data General Corp., Gould, Inc. and Prime Computer, Inc. to the list. And in virtually every case, the initiation of a takeover rumor has provoked a buying spree in the allegedly courted company, despite there not being one shred of evidence that GE ever talked with any of the companies.

One wonders what the stimulus for all this rumor mongering might

be. It is entirely possible that, by the time this column runs, GE could own DEC. But it is unlikely, notwithstanding DEC's relatively cheap stock price right now. Why blow the entire wad on one company, to whose systems the rest of GE would be ostensibly committed, when GE can buy several, smaller, high-growth firms or even large pieces of bigger firms, not unlike what IBM has done with Rolm Corp. and Intel Corp.?

And as far as the acquisition of HP is concerned (which would cost about as much as DEC — \$4 billion to \$5 billion), it seems that Mr. Hewlett and Mr. Packard have very little to gain at this stage of their lives in liquidating interest in the company they founded in a garage back during the Depression. The smart money is taking the GE rumors at face value.

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Human Edge Software Corp.  
I.B. Magazette  
Independent Computer Consultants Associates  
Information Builders  
Inforunner  
InfoWorld  
Interface Inc.  
International Computerized Linguistics  
Interphase Corporation  
Lexisoft Inc.  
LPKF Pacific  
Marc Software  
MICRO  
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Micro-Design Inc.  
Micro Line Inc.  
Microtek Lab  
National Instruments  
NEC  
Novation  
Omega Software Inc.  
Omni Graphics Inc.  
On Trak Data Systems  
OSM Computer Corp.  
Palantir Software  
Panamax Line  
Conditioning  
P.C. Telemart  
PC World  
Pencept Inc.

Personal CAD Systems  
Petroware  
Phase Information Machines  
Prentice Hall Business & Professional Division  
Printronic Inc.  
Que Corporation  
Racal-Vadic  
Roland DG  
RTCS/Real Time Computer Science Corp.  
Santa Clara Systems  
Seequa  
Sensor-Based Systems  
Software Automation Inc.  
Softwaire Centre International  
Software Solutions Inc.  
Sorbus Service Division  
MAL  
Sperry Corp.  
Summagraphics Corporation  
SWI International Systems  
Sysprint Inc.  
Systems Management Associates  
Tall Grass Technology  
TCS Software  
Televideo Systems Inc.  
3M Data Recording Products  
Thunderhawk Corporation  
Toshiba America Inc.  
United Networking Systems Inc.  
Vectrix Corp.  
Verbatim Corporation  
Vertex Systems  
ZEDUCOMP

(Exhibitors as of Dec. 15, 1983)

**DEC** from page 95

was "still not tremendous."

Smith said he believes DEC revenues for the quarter were up 25% to 26% over the previous year. Some of that increase can be attributed to equipment shipments that had been deferred during the first quarter, he said. Accounting for catching up on the previous delays, revenue growth for the current year should be about 20% to 21% ahead of last year, he added.

**Software available**

DEC will probably report shipments of 30,000 personal computers for the quarter just ended, according to Smith, compared to just 19,000 in the previous quarter. "There is software available now, and [DEC is] offering free maintenance," Smith said.

The news may not be quite so good for the third quarter, in Smith's view. "I think quarter three [earnings] will be below quarter three last year. [DEC] has built up [its] expenses; [it has] added 2,500 to 3,000 employees," he said.

DEC was also the latest company to be involved in rumors of an imminent takeover by General Electric Co., according to a Boston newspaper.

Mark A. Steinkrauss, director of investor relations, issued a flat denial of such a prospect. "I don't know of any discussion between the two companies," Steinkrauss said.

With about 58 million shares issued, DEC's street value, based on the \$78 per share closing value the day the company issued its preliminary report, is about \$4.5 billion. The company does not appear to be very closely held, with founder and president Kenneth H. Olsen, the largest single shareholder, owning slightly more than 4% of issued shares, or 2.4 million shares, according to the latest financial report.

Alpha Software Corp.  
Anadex Inc.  
Arbor Technology  
Ashton-Tate  
AST Research Inc.  
Benchmark  
BOS National Inc.  
BPI Systems Inc.  
Robert J. Brady Company  
Braid Communications  
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Celestial Software Inc.  
Cermetek  
Microelectronics  
Compaq Computer  
Computercraft  
Computer Intelligence  
ComputerKnowledge Corp.

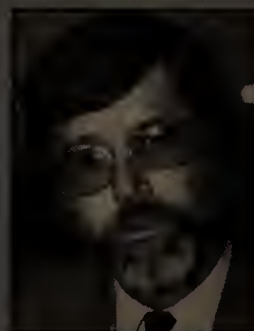
Computer Roomers  
Computerworld  
Computex Corporation  
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Richard Rabins,  
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Richard Dalton, Editor  
Whole Earth Software  
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Steve Heller, *President, Entre Computer Centres*  
Martin Alpert, *President, Tecmar Inc.*  
Harry Miller, *Editor, PC World*  
Aaron Goldberg, *Research Manager, International Data Corporation*  
Len Simon, *President, Computer City*  
Gordon Eubanks, *Independent Consultant, formerly Vice President, Marketing, Digital Research*  
Vince Caracio, *President, Sales Technology Inc.*  
Dr. Irwin Jarett, *President, Plasmach Corp.*  
Rick Inzome, *President, Computer Mart*  
Philip L. Reed, III, *Vice President, Operations, Dataquest, Inc.*  
plus many more.



## COMPUTER INDUSTRY

# Is IBM qualified to set all industry standards?

## OUTSIDE LINES

BOB  
DJURDJEVIC

A modern version of a Greek tragedy, complete with sacrificial victim, has been unfolding in U.S. courtrooms on both coasts since

last November.

In Connecticut, IBM filed suit against The Gartner Group, Inc., a Stamford, Conn.-based market research company, and the same day settled the case. In California five days earlier, IBM added a former Gartner employee, who was also an ex-IBMer, to the list of defendants in

its civil lawsuit against National Semiconductor Corp. and its subsidiary, National Advanced Systems, Inc. (NAS).

Without admitting liability, The Gartner Group agreed to return any IBM "protected information" it may still have; to identify to IBM all persons who might have disclosed or may in the future disclose such information; and to cooperate with IBM in any investigation of disclosure.

Why did IBM continue litigation against an individual after it had forced his employer to its knees? Why had IBM waited so long to file the charges against him? How did

IBM obtain evidence against him?

An IBM spokesman refused to comment about the case "since the matter is before the courts." The plaintiff's lawyer has advised his client to remain mum for the time being, too. But NAS President David Martin sees this as yet another IBM effort to make an example out of the individual's case. "IBM is on a self-appointed mission to clean up the industry to their set of standards," he said.

No wonder IBM's adversaries are giving up, when even a federal judge commended the parties in the IBM/Hitachi Ltd. case for their wisdom in arriving at a settlement. "This could

be an industrywide standard for a dispute resolution," the presiding judge said.

The consequences of such settlements may also affect innocent observers. Let us assume one meets an IBM employee who voluntarily begins to spill the beans about his employer. If IBM were to act consistently, the listener, and not just the IBM employee, could be found "guilty" by IBM's standard if he did not report this incident "forthwith" to IBM.

In the past, many people have volunteered to assist IBM if the company's legitimate trade secrets were being threatened. But it is one thing to let each individual act in accordance with his conscience and another to have IBM tell you (as in the Gartner settlement) that you "shall notify IBM forthwith" and "shall cooperate with IBM's reasonable requests in an investigation of the circumstances."

If you were a journalist, for example, this could mean IBM has just put you out of business. Is IBM, therefore, attempting to extend its power not just over its employees and competitors, but also over the press and other third parties?

None of this is to take away IBM's right to protect its own trade secrets. But if new standards of business conduct are needed, such issues should be decided by our elected representatives and the industry as a whole, not just by a single competitor pointing a gun at the head of its adversaries.

How qualified is IBM for this self-appointed role? Is IBM itself above reproach?

A Phoenix-based law firm, Brown & Bain, was retained in 1981 by National Semi for another alleged trade-secret violation case. This case was settled in June 1982. Two months later, Brown & Bain advised National Semi that it would be acting for IBM, its old client, "in the pending dispute between National and IBM."

Ultimately, National Semi/NAS lawyers managed to get this law firm disqualified from the case. Though the court said there was no indication of unethical attitudes or practices as far as Brown & Bain was concerned, one cannot help wondering about IBM's business judgment, if not its motives, in retaining counsel which it knew had just concluded a case acting for the opposite side.

Or consider the preannouncement hype of the PCjr and the System/36. Media articles hurt IBM competitors' sales, as some buyers held back on their purchases until the IBM products were finally unveiled. The level of detailed product information which the press reported left little doubt that the source of that information must have originated inside IBM. Yet this time there were no lawsuits. No IBM employees were fired to set an example, at least as far as the public is aware.

Could it be that such information leaks are condoned, if not intentionally planted, if they serve IBM's purposes? If so, doesn't that make IBM a company with double standards? And if that's the case, is that the kind of company that should assume the role of setting the industry's business conduct rules?

*Djurdjovic is president of Annex Holdings Corp. of Phoenix and publisher of the Annex Computer Report.*

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### Wednesday, February 1, 1984

#### User Sessions:

The Benefits of the IBM PC for Small Businesses  
Financing Options and Tax Advantages  
Available Add-Ons and Peripherals  
Software: What's Available and How to Find It  
What Do the Compatibles Have To Offer?  
How I Became Compatible With My IBM PC  
Medical/Dental Applications for the PC  
The PC in the Law Office  
PC's and Real Estate  
Manufacturing Resource Planning with the PC  
Investment Software for the PC  
CPA Software: The Bottom Line  
Software for Insurance Applications  
Distributed Control Software for the PC

### Thursday, February 2, 1984

#### User Sessions:

The Anatomy of the IBM PC  
Defining Levels of Compatibility Between Systems  
Overview of Compatibles: Desktops and Portables  
Word Processing Software  
Database Management Software  
Business Graphics Software  
Analyzing Your Software Requirements  
Overview of Major Business Applications Software  
Integrated Software Solutions

### Friday, February 3, 1984

#### User Sessions: The PC in the Corporate Environment

Review of Policy and Planning Issues  
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Three-day admission to all exhibits and conference sessions is \$30.00. Admission to the exhibits only for three days is \$10.00. Show hours run from 10:00 AM to 5:00 PM Wednesday and Thursday, February 1 and 2, and from 10:00 AM to 3:30 PM on Friday, February 3. Conference sessions run from 8:30 - 10:30 AM and 2:30 - 5:30 PM on all three days.

For attendee and conference information, call CW Communications at 1-800-225-4698. For information on exhibiting, call Mitch Hall Associates at 1-617-329-7466.

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## COMPUTER INDUSTRY

# High-tech trade groups press for R&D bills

SAN JOSE, Calif. — As the U.S. Congress convenes this month to begin its election-year deliberations, a rainbow coalition of powerful, high-technology trade associations is pressing the Reagan administration to beef up its support for permanent tax incentives for their members.

With the current research and development tax credit provision due to expire at the end of next year, the Semiconductor Industry Association, together with the American Electronics Association, the Computer and Business Equipment Manufacturers Association and the Scientific Apparatus Makers Association, is seeking

passage of the High Technology Research and Scientific Act now before Congress.

The act's companion bills — S. 2165, introduced in the U.S. Senate by Sen. John Danforth (R-Mo.), and H.R. 4475, sponsored by Rep. James Shannon (D-Mass.) — are intended to enhance and make permanent the R&D tax credits included in President Reagan's 1981 Economic Recovery Tax Act and to improve the level of scientific education in U.S. colleges and universities.

The ad hoc group had prepared a study, "High Technology Tax Policies for the 1980s," which was to be

presented in Washington, D.C., last week.

The study, prepared over the last year, contended essentially that many current tax policies are not well suited to aid in the economy's transition toward an internationally competitive technology-based economy.

"World leadership in the semiconductor industry is dependent in the long term on continuous innovations and an adequate supply of qualified scientists and engineers," Tom Hinkelman, president and executive director of the SIA, remarked. "Passage of this act will contribute

substantially to our industry's ability to help to keep the U.S. in the forefront of technological innovation."

According to the four trade associations, the proposed act provides enhanced incentives for investment in R&D by expanding the current laws allowing tax credits for increased research activities and corporate funding of basic university research and by making the R&D tax credit a permanent part of the tax laws.

Hinkelman also called for swift action on the proposal, claiming that the election year hoopla will detract Congress from pressing legislative matters.

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Magnuson	M80/32	.56
Magnuson	M80/31	.42
IBM	4331-2	.40
IBM	4341-9	.38
Magnuson	M80/30	.24

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## MCI posts flat earnings

WASHINGTON, D.C. — For the first time in several quarters, MCI Communications Corp. has posted flat earnings, attributing the results to heavy capital spending as the company prepares to compete with an unregulated AT&T.

MCI showed profits of \$43.6 million, or 19 cents per share, for the fourth quarter, compared with \$43.5 million, or 22 cents per share, for the same quarter a year earlier. Revenues in the period jumped 47% to \$430 million, compared with \$294 million a year ago.

For the year, MCI earned \$203 million, or 89 cents per share, a 34% increase over last year's \$151 million profit. Sales for the year totaled \$1.5 billion, an increase of 67% over fiscal 1982.

Increased spending for communications lines leased from other long-distance competitors, which permitted MCI to offer customers interstate calling regardless of whether the call terminates in a city on the MCI network, also had a negative effect on the quarterly bottom line, the company said.

"The increased expense... is part of a strategy to build MCI's market share as rapidly as possible in anticipation of equal access," commented V. Orville Wright, president and chief executive officer.

## Gould plans to sell division

ROLLING MEADOWS, Ill. — Gould, Inc. is planning to sell its \$25 million Power Conversion Division as a further move to focus its holdings more specifically on electronics, the company announced recently.

The company said the division's products are not strategically critical to its primary business base in computers, factory automation systems and other electronic components.

Gould declined to speculate on possible suitors for the division or on its asking price, saying only that the company has held discussions with several companies.



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## COMPUTER INDUSTRY

## Exec views storage mart

PALM SPRINGS, Calif. — Erasable optical storage products will enter the market in 1987 and will impact both the high end and low end of the present magnetic storage market, according to Peter Lloyd, vice-president and general manager of Shugart Corp.'s Optimum Division.

Speaking here earlier this month at a session of Infocorp's 1984 Strategic Issues Conference, Lloyd predicted that 1984 "is the year of evaluation of (nonerasable optical) products by system companies and integration into the end-user market," and that 1985 will see a large volume of such products.

In 1986, he continued, will come the introduction of optical storage workstations.

Nonerasable optical storage, either read-only or write-once, will find a willing market because of high-storage capacity, user-friendliness and because there are many applications where erasability is not required, Lloyd said.

High-end hardware users will use nonerasable optical storage for its "greater off-line storage access" and comparatively low cost, he claimed, adding that the products will eventually replace tape libraries. Low-end hardware users will use the products for image storing and the ability to access large amounts of data at low costs, he continued.

Optical storage, in Lloyd's view, will follow the same trends as magnetic storage: lower cost, higher performance and smaller size. But, he added, reductions in cost and size will be faster than experienced by magnetic storage.

## IEEE edition available

SILVER SPRING, Md. — The Institute of Electrical and Electronics Engineers (IEEE) has announced the availability of the fourth edition of its best-seller, *Tutorial: Software Design Techniques*, edited by Peter Freeman and Peter Wasserman, both of the University of California.

The edition includes 47 papers, 22 of which did not appear in the previous edition, and captures the latest ideas in software design, IEEE said.

Major enhancements include Freeman's original paper, "Fundamentals of Design," along with coverage of user interface design, object-oriented design, design of concurrent systems and integration of design into software development methodologies, IEEE said.

The book has been published for analysts, designers, programmers and managers seeking a broader perspective of software design, as well as for classroom use in software engineering courses.

The 736-page *Tutorial: Software Design Techniques* is priced at \$20 for IEEE members and \$32 for non-members.

IEEE, Suite 300, 1109 Spring St., Silver Spring, Md. 20910.

## Hughes plans satellites

WASHINGTON, D.C. — Hughes Communications Galaxy, Inc. has hatched plans for a \$450 million private satellite communications system designed to operate in a heretofore unused frequency band and to provide six times the communications capacity of existing domestic satellites.

Hughes has requested authority from the Federal Communications Commission to build, launch and operate two satellites that will function at 20 and 30 GHz, with the first satellite to be launched in late 1988. Both satellites' designs will be based on the Intelsat VI spacecraft Hughes is building for the Intelsat consortium.

The satellites' 5,000-lb payloads will provide 3,000 channels, each capable of transmitting one full-motion videoconferencing call or the equivalent amount of wide-band data service.

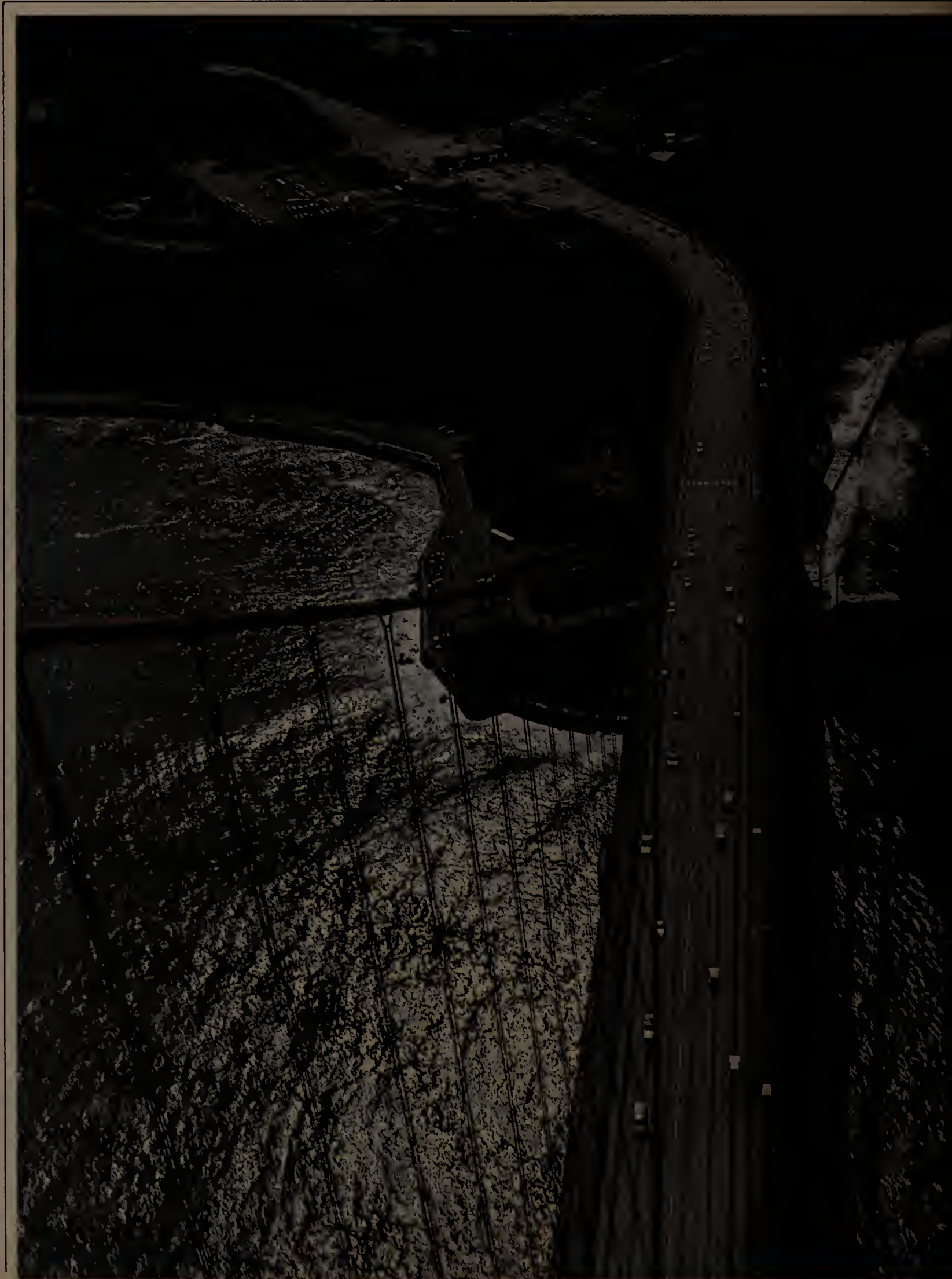
"The millimeter-wave technology needed to build this new generation of communications satellites has been developed for two decades here and elsewhere," commented Albert D. Wheelon, chairman of Hughes.

"The technology is ready now for commercial application . . . the lower frequency orbital positions are being filled rapidly, and it is timely to move ahead with a millimeter-wave system," according to Hughes.

## IBM micro seen costly

SAN JOSE, Calif. — The IBM Personal Computer with a local-area network connection is too expensive to be used by more than a fraction of the office work force, according to a recently released report from Strategic, Inc.

In a study titled "Multi-User, Multiprocessor Computer Systems: Impact and Opportunities," the research and consulting firm concluded that a Personal Computer costing \$3,000 to \$4,000 with local-area network connections is not competitive with the offerings of vendors such as





COMPUTER INDUSTRY

Convergent Technology, Inc., Burroughs Corp., Molecular Computer, Inc. or NCR Corp.

"Today, with a multiuser micro-processor system supplied by these companies, it can cost less than \$2,000 to put a workstation on an employee's desk and to be able to share data and costly peripherals among all the workstations," asserted Michael Killen, president of Strategic.

The report forecast the market for multiuser microcomputers, including Personal Computers and local-area networks, multiprocessors and shared-processor systems, will grow from \$448 million in 1983 to \$5.9 billion in 1987.

The report is priced at \$1,500. Strategic, Box 9747, San Jose, Calif. 95157.

# DG reports strong gains For first quarter

WESTBORO, Mass. — Citing continued growth in both orders and shipments, Data General Corp. reported strong gains in sales and profits for its first quarter that ended Dec. 17.

Sales totaled \$220 million, a 22% jump compared with the same period a year earlier.

Profits jumped nearly threefold to \$9 million, or 36 cents per share, compared with profit of \$3 million, or 14 cents per share, last year.

### Mini demand continuing

According to Edson deCastro, DG's

president, an increase in demand that began last summer for the company's minicomputer line has continued, as has the economywide increase in capital spending.

"If this trend in capital spending continues, I am optimistic about DG's prospects for strong growth," he commented.

"Sustaining that growth will depend not only on the continuing improvement in customer orders, but also on the availability of raw materials and components, primarily semiconductors," deCastro maintained.

# Olivetti airs merger plan

DALLAS — Docutel/Olivetti Corp. has announced a consolidation and reorganization designed to streamline marketing operations for the company's office and financial product lines.

The reorganization combines the former office products and financial systems divisions into a single entity. The company said that, with the consolidation, it will institute three marketing-support units. The newly created customer service and tele-marketing groups will work directly with office product dealers, while the third group, field marketing, will include automatic teller machine and terminal product sellers.

Approximately 60 positions will be eliminated as a result of the consolidation. John J. Douglas, company president, said the changes are steps in a long-range program to mesh the office products and financial systems operations into a single profitable organization "by concentrating personnel in key support and operations areas."

# Honeywell sees profits

MINNEAPOLIS — Honeywell, Inc. announced Jan. 17 a 15.3% profit increase for fiscal year 1983 in comparison to the previous year. Profits from the Information Systems Division increased by \$51 million over the same period, "largely as a result of aggressive cost-saving efforts."

Total profits for the fourth quarter ended Dec. 31 increased by only \$3.9 million over the \$88 million reported for the corresponding period one year ago.

Income for the year ended Dec. 31 was \$231.2 million on revenues of \$5.7 billion; the previous year, the company had reported total net income of \$206.6 million on revenues of \$5.4 billion.

Edson Spencer, chairman and chief executive officer of the company, cited a sharp improvement in the company's computer business and a significant reduction in interest expense as the major reasons for the improved earnings.

Honeywell's Aerospace and Defense Division also reported a profit increase, \$22 million, over the previous year, but the Control Products and Control Systems Divisions reported profit decreases of \$33 million and \$52 million, respectively.

The Information Systems Division, however, experienced a reduction in total yearly revenues of \$19 million; Control Systems also reported reduced revenues, while the other two divisions increased revenues.

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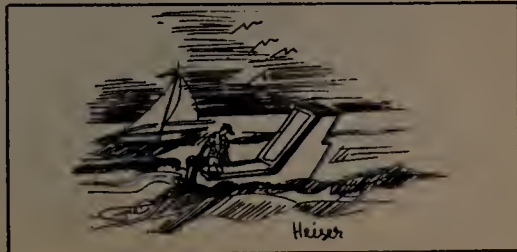
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The next offering is February 27 in San Francisco. For information on upcoming classes or our in-house ADF class, contact: Data Knowledge, Inc., P.O. Box 1482, San Bruno, CA (415) 872-3600.

## COMPUTER INDUSTRY

### SUPERSHORTS

Computervision Corp. has signed an agreement with Invotek, Inc. and Richard Muther & Associates, Inc., under which the companies will jointly develop, market and support space and facilities planning software designed to meet the needs of architects, space planners and facilities managers.

The Ultimate Corp. has signed a four-year contract with Bull Group, Paris, under which Bull will supply

Ultimate with up to \$28.8 million of minicomputer systems. Bull will provide Bull Mini 6 systems, which are based on Honeywell, Inc. DPS 6/level 6 minicomputer systems, for distribution by Ultimate's international network of independent dealers.

Honeywell, Inc.'s Communication Services business has been elevated to divisional status. M.L. Jackson, who has served as director since 1980, has been promoted to vice-president and general manager of the new division.

Perception Technology Corp. (PTC) has announced an agreement with AT&T Information Systems, Inc. calling for the inclusion of PTC's Interactive Data Entry/Voice Response System in proposals by AT&T Information Systems to its customers for call-management systems. PTC will supply equipment directly to interested customers.

American Software, Inc. and Prutech Research and Development Partnership have announced the formation of a joint venture under which American Research, a subsidiary of American Software, will perform research pursuant to the development of two new application software products. The new products will be an accounts receivable system for IBM mainframe computers and manufacturing management application software for the IBM System/38.

Fujitsu Ltd. and Texas Instruments, Inc. have signed an alternate source agreement under which Fujitsu will supply semiconductor design and fabrication information to TI. Fujitsu has the option of using TI's computer-aided design tools for its gate arrays.

The Hall L. Hibbard Computer-Aided Aerospace Design Facility has been established at MIT through gifts from Perkin-Elmer Corp. and Cadam, Inc., a subsidiary of Lockheed Aircraft Corp. Dr. Jack L. Kerrebrock, Richard Cockburn MacLaurin Professor of Aeronautics and Astronautics and head of MIT's Department of Aeronautics and Astronautics, said Perkin-Elmer has donated hardware and Cadam has donated software for the center. Each company gift is valued at about \$250,000. Lockheed is providing a \$50,000 operating fund for the first five years.

Ridge Computers, manufacturer of 32-bit personal computers, is offering discounts totaling \$4 million on its computer systems to universities and national research laboratories. Under Ridge's special year-long "Commitment to Education" program, the first 100 universities and/or national research laboratories that qualify can buy a Ridge 32 computer for \$19,900, a discount of 66% off the regular list price.

IBM recently donated \$2.8 million to more than 1,100 colleges and universities under its IBM Matching Grants Program for Higher Education, bringing 1983 contributions to \$10.8 million, up 20% over a year ago. For every dollar IBM employees and their spouses contribute to approved degree-granting colleges and universities, up to \$5,000 per donor per college annually, IBM contributes two dollars to the educational institutions.

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# How to tie things together today without being tied down tomorrow.

This April, *Computerworld Office Automation* will give you a close look at the world of communications products and services. You'll read about what's out there now and what's coming. And how to get started while leaving your architecture open for the technologies of the future. And you'll get it all from the perspective of end users who have to increase productivity now while making sure the their company's investment won't be obsolete in two years.

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*Computerworld Office Automation* is designed to give you OA information geared to the DP/MIS environment — in a way that no traditional office publication can. As one of *Computerworld's* 114,000 subscribers in the U.S., you'll get six issues of *Computerworld Office Automation* in 1984 — as part of your subscription! And if your users need to increase their communications links, you won't want to miss this issue devoted to Communications in the office.

If you've got office automation and office communication products our readers should know about, then you need to get your ad reservation in by March 2nd. To reserve ad space in this April 11th issue of *Computerworld Office Automation*, call one

of the sales offices listed below, or Ed Marecki, National Sales Director at 617-879-0700.

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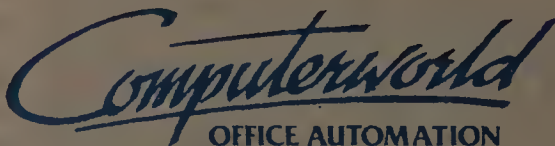
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## COMPUTER INDUSTRY

## PROFITS from page 95

backlogs.

"Record R&D spending in the [third] quarter exceeded the \$100 million annualized rate for the first time . . . and for the year to date was 18.5% of sales," said W.J. Sanders, chairman and president. "Pretax and net profit margins of 18% and 13%, respectively, were the highest since the 1974-75 recession."

Sanders said that new orders at AMD rose 39% in the quarter to \$292 million, compared with the previous quarter, with this growth led by orders for microprocessors and telecommunications products.

## Adapso names board

ARLINGTON, Va. — The Association of Data Processing Service Organizations, Inc. (Adapso), representing 650 software and service companies, has announced its slate of officers and directors for 1984.

Doug Altenbern, chairman and president of Endata, Inc., has been named board chairman, while Arthur Kramer, managing partner of Arthur Kramer & Co., was reelected vice-chairman.

Other officers include: George Raymond, president of Automatic Business Centers, treasurer; Fred Lafer, general counsel of Automatic Data Processing, chairman of the executive committee; and George Shea, corporate counsel of National Data Corp., vice-president of government relations.

Also named were Jay Goldberg, president of Software Design Associates, vice-president of competitive practices; J. Allen Hufft, president of University Computing Co., vice-president of educational and informational services; John P. Imlay, chairman of Management Science America, Inc., vice-president of image.

## Wang posts strong sales

LOWELL, Mass. — Wang Laboratories, Inc. continued on its strong and steady growth track in its second fiscal quarter, posting earnings and sales gains of nearly 40%.

Sales for the quarter totaled \$515 million — in excess of \$2 billion on an annual basis — compared with sales of \$367 million in the same period last year. Profits for the quarter jumped to \$48 million, or 35 cents per share, a 38% increase over last year.

In addition, new orders increased 34% to \$618 million. The company reported that the earnings and sales gains were consistent with its business plans and were achieved "despite increased competitive pricing practices within the industry, which continued to affect profit margins adversely." The company further reported that a strong U.S. dollar reduced overseas profits, as 40% of Wang's sales are made abroad.

# Wang recognizes need to coexist

## Study analyzes leading OA vendors

FRAMINGHAM, Mass. — "Wang [Laboratories, Inc.] will never be, for all the users in its served markets, 'the only office automation company you'll ever need,'" according to a report recently released here that analyzed the strategies of four leading vendors in various segments of the office automation market.

The first of two parts, "Major Vendor Strategies in the Electronic Office — Part 1," by Framingham, Mass.-based International Data Corp. (IDC), focused on Wang Laboratories, Inc., Digital Equipment Corp., IBM and Xerox Corp.

IDC prefaced its report with a qualifier: "Ranking in OA is a little like establishing suspension bridge records: define the relevant universe closely enough, and virtually any span can be the longest or tallest."

Nevertheless, the report did settle on a number of conclusions: IBM, in OA, as in virtually every other market, intends to be number one; DEC, which has billed itself as the Number 2 computer vendor, similarly intends to become the Avis of OA; Wang is still working to establish its claim as "the office automation company"; and Xerox "continues to search for a winning office strategy."

While Wang, at the end of 1982, had captured 51.4% of the installed base in the clustered word processing market, according to IDC, Wang has realized it will never be the only OA company for its customers and "must be able to coexist with systems that it will encounter in the larger world — that is to say, live with IBM." Wang dominated the markets of word processing and small business computers, but according to IDC, those markets are shrinking, and the company that made it being where IBM was not "cannot afford not to succeed in becoming a full-line office automation vendor."

IBM, according to IDC, "has set a goal of being the Number 1 player in the markets it enters, and there is no single compelling reason why this

*'Ranking in OA is a little like establishing suspension bridge records: define the relevant universe closely enough, and virtually any span can be the longest or tallest.'* — IDC report.

will not be the case in the office." However, IDC countered, users will "discover that there is still a long way to go before the diverse range of IBM devices is capable of genuinely unrestricted communication . . . IBM has gone too far along too many different paths to offer a uniform and relatively consistent set of office products."

IBM has already committed itself to a coherent office strategy, with integration riding the backs of Document Content Architecture and Document Interchange Architecture protocols being developed and publicized to permit document transfer

among dissimilar devices, IDC concluded. While those protocols do not meet the criteria of a multiproduct-line, uniform user interface, other vendors will continue to develop their products along IBM's standards, according to IDC.

DEC's thrust into OA, with the introduction of its All-in-One software less than two years ago and a much-noted internal reorganization, has begun to sway the perception that the company could only deal with highly technical computer professionals, according to IDC. But perception remains the "primary strategic challenge" and will require a protracted and expensive marketing and promotional effort on DEC's part, IDC said.

Xerox, according to IDC, "does not seem to be nearly the force to be reckoned with that it did even 18 months ago." A "strategic drift" and lack of new products has seen the company lose momentum as a total systems supplier for the electronic office, the report said.

Part two of the report will include Data General Corp., Hewlett-Packard Co. and others, including a number of software companies.

IDC, 5 Speen St., Framingham, Mass. 01701.

## China-U.S. tech exchange set

SPOKANE, Wash. — A delegation of U.S. computer graphics specialists has been selected to conduct a three-week technical exchange with counterparts in the People's Republic of China.

Peter C. Wang, president of Automation Technology Institute, Inc. of Pebble Beach, Calif., has been named delegation leader, according to the People to People Citizen Ambassador Program, which selected the delegates and is sponsoring the exchange.

Through a series of seminars,

meetings and on-site visits in several Chinese cities, the delegation of specialists will examine China's progress and needs in computer graphics technology, focusing particular attention on automated production, maintenance and retrieval of engineering data and the more traditional research areas.

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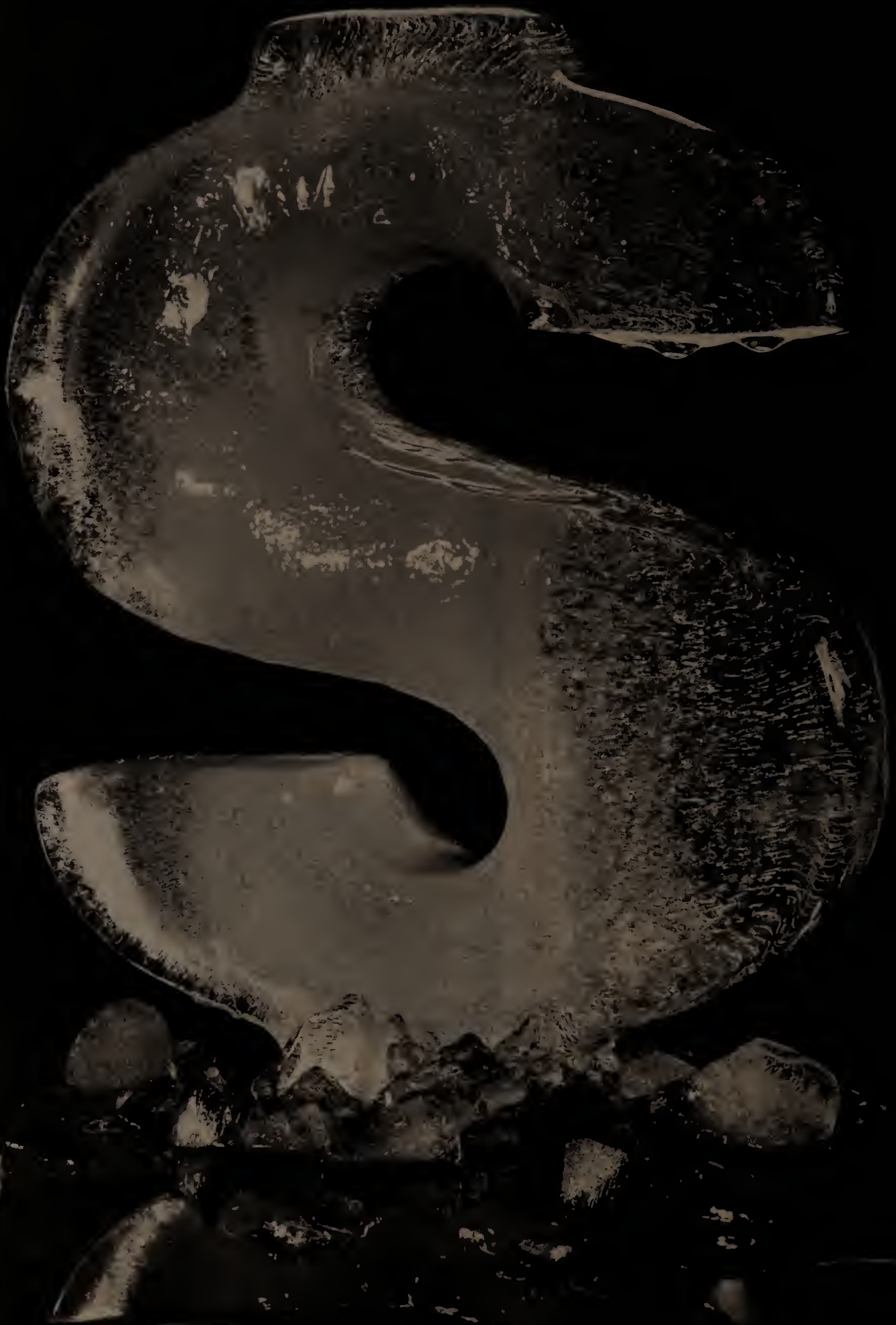
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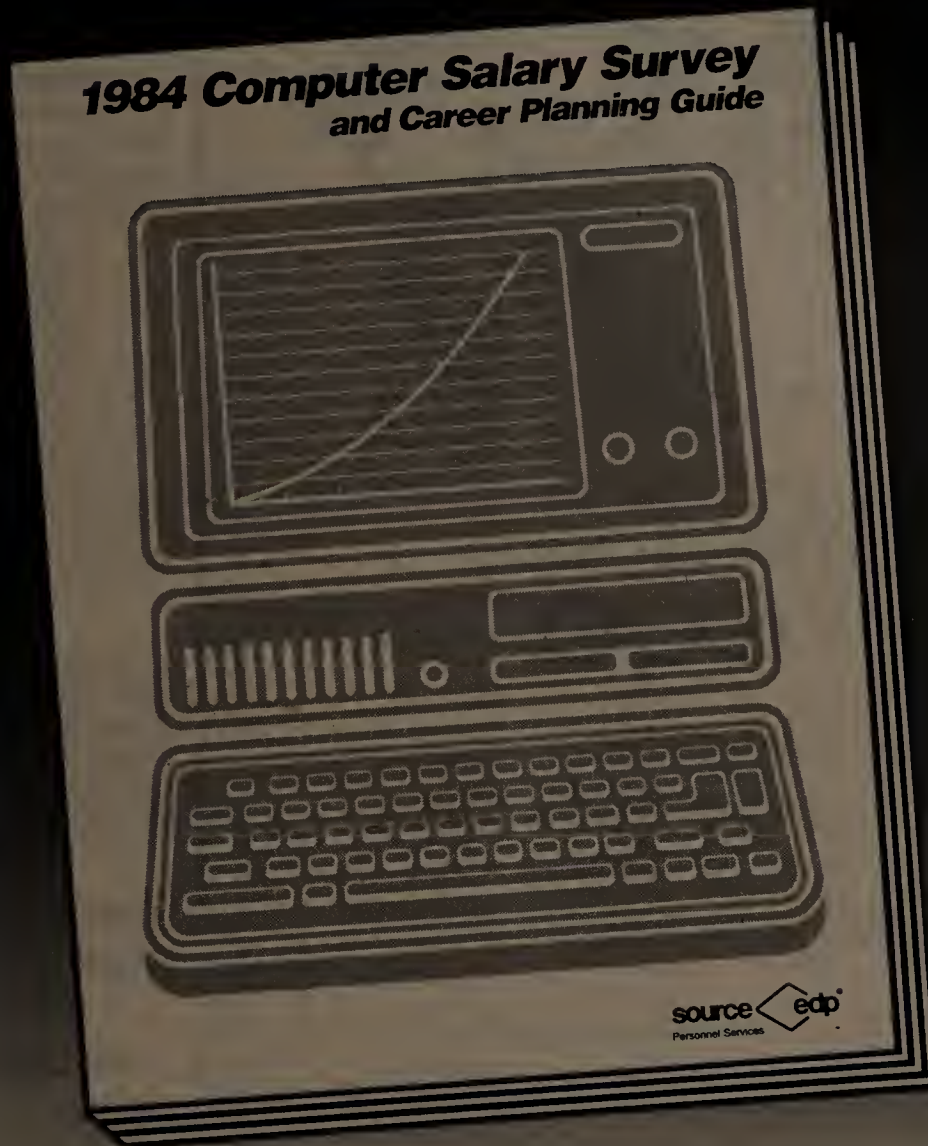
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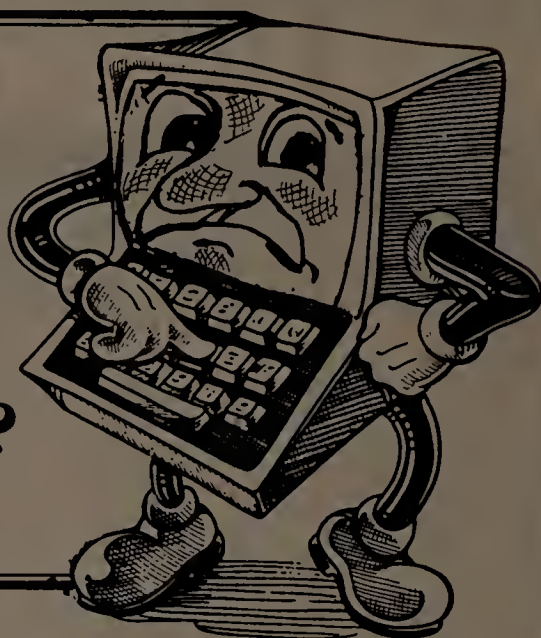
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## SYSTEMS PROGRAMMERS

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Work directly with our clients, in product support and assist them with any problems or questions that may arise. A minimum of 2 years experience with MVS BCP internals is essential as is good communications skills and the ability to deal professionally with people of all levels. Knowledge of multiple CPU related software, preferably MSI, MSM or GCD would be a major asset. Some travel to SHARE, CMG and GUIDE meetings is also necessary.

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Combine Arizona living with a dynamic career. Send your resume with salary requirements to:

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Arizona Public Service Company

## FACULTY POSITIONS COMPUTER SCIENCE/ MATHEMATICS

Three positions are anticipated in the Mathematics and Computer Science Department for the Fall semester of 1984. One or more of the anticipated openings may become tenure track positions.

Applicants for the Computer Science positions must have at least a Master's degree in Computer Science and be prepared to enroll in a Ph.D. program. Applicants for the Mathematics positions must have a Ph.D. in Mathematics. Appointments will be made at the Assistant or Associate Professor rank commensurate with experience. Teaching responsibilities shall include upper-level undergraduate courses in computer science and/or mathematics, along with traditional introductory and service courses. Candidates with specified qualifications in both areas offer the greatest flexibility. New computing equipment currently being acquired will provide extensive support for separate administrative and academic systems.

Millersville University is the oldest of the 14 universities of the Pennsylvania State System of Higher Education. The campus is located in a suburb of historic Lancaster, oldest inland city in the U.S. Located less than three hours from New York City, Washington, D.C., and Philadelphia, it offers a pleasant atmosphere with easy access to the Jersey shore and the Pocono resorts. The department has 24 full-time faculty and offers a B.S. in Computer Science as well as the B.A. and B.S. degrees in Mathematics. Our programs are well respected in the region and have drawn highly motivated and able students.

Interested applicants should submit resume showing education and experience, transcripts of all graduate and undergraduate courses, and three letters of reference to: Dr. James A. Stager, Chairperson, Department of Mathematics and Computer Science, MILLERSVILLE UNIVERSITY, Millersville, PA 17551. Interviews will begin in mid-February and continue until suitable candidates are selected.

Millersville earnestly seeks and is eager to receive applications from women and minority candidates. Affirmative Action/Equal Opportunity Employer.

## ASSIGNMENT OPPORTUNITIES IN EUROPE AND SOUTH AFRICA FOR DP PROFESSIONALS, BUSINESS ANALYSTS, ENGINEERS

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- TRAINING SPECIALISTS
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If you are interested in our overseas positions, please send your detailed resume, professional and personal details and objectives, and earning expectations to:

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Commissioner Street  
Johannesburg 2000 SA  
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## COMPUTER SCIENTISTS/COMPUTER SPECIALIST Center for Programming Science & Technology of the

### INSTITUTE FOR COMPUTER SCIENCES AND TECHNOLOGY

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Technical areas for which staff is currently needed include:

- Database Management Technology - Database Management Systems, Database Machines, Distributed Database Technology, Data Administration.
- Application Development Technology - Very High Level Languages, Program Generators, Advanced Software Development Environment.
- Knowledge-based Systems - Expert Assistance System Technology, Application to Software Development.
- Computer Security and Risk Management.
- System Architecture - Microcomputer Software Technology, Micro-Mainframe Link, Distributed Systems.
- Systems Programming - Database Laboratory Software Development.

Graduate degree in computer science or mathematics or equivalent experience with demonstrated ability to conduct research is required. Recent experience commensurate with Civil Service grade level in the area or areas of specialization is required.

The computer scientist positions range from GS-9 to GS-14 (\$20,965 to \$55,538) and the computer specialist position ranges from GS-12 to GS-13 (\$30,402 to \$46,997) depending upon qualifications and experience, and offer competitive salary, excellent career benefits, and other professional growth opportunities. Please send your Personal Qualifications Statement (SF-171) to:

U.S. Department of Commerce  
National Bureau of Standards  
Administration Building, Room A-123  
Washington, D.C. 20234  
ATTN: Ms. Jo White (640-CW)

The National Bureau of Standards is located in modern facilities in Gaithersburg, MD and is an equal opportunity/affirmative action employer. U.S. citizenship is required.

## Head, Library Systems Duke University

Duke University Libraries is seeking a strong individual to plan and coordinate the utilization of new technologies to enhance Duke's present automated systems, while working toward implementation of an on-line, integrated library system. The position requires 3-5 years experience in analysis and programming, preferably in a library environment; demonstrated ability to plan, budget, analyze, program, work well with others, and communicate effectively both orally and in writing; demonstrated knowledge of major computer programming language (COBOL experience with IBM or Tandem computers preferred), computer hardware, and library automation; supervisory experience and MLS from an ALA accredited program strongly preferred.

Duke has a superior benefits package and offers competitive salaries.

Letter of application and resume should be submitted to:

Library Personnel Office  
216 Perkins Library  
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## SYSTEMS PROGRAMMER

Aggressive Billion \$, Sunbelt Bank, expanding its technical staff, seeks IBM Systems Programmer.

Our current environment includes RACF, JCS 2, CICS.

Candidate should possess application programming background and a minimum of three years 4341 MVS systems programming experience. Proficiency with SMP4 is a plus.

Send resume and salary requirements to:

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## SOFTWARE ENGINEERS

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Primary responsibilities will include the design and implementation of data management software for the Optical Storage product line. The ideal candidates will be knowledgeable in MVS Architecture, proficient in 370 Assembler language and have direct experience with MVS internals.

#### TEST/STAFF TEST ENGINEERS

You will be part of a UNIX Programming team involved in the design and implementation of a large scale automated test floor software system written in the C language. Expertise in any or all of the following areas is required: design and implementation of database management systems, manufacturing systems, quality assurance systems, and local area networks. Knowledge of MVS/VM and computer hardware is desirable. BSCS or equivalent is required. Salary and grade will be commensurate with experience.

So, if you like challenging problems, high technology, an atmosphere of experienced professionals and the fast growing future of one of the most dynamic companies in the field, please call Dan O'Reilly collect at (303) 678-3034 or forward your detailed resume to his attention, Storage Technology Corporation, MD FF, Dept. 0123, #16, 2270 South 88th Street, Louisville, Colorado 80028. Equal Opportunity Employer.



## Storage Technology

## COMPUTER APPLICATIONS ANALYSTS

# Mobil

Mobil Exploration and Producing Services Inc. (MEPSI) provides programming and data processing support to Mobil Oil Corporation's exploration and producing activities worldwide. Several openings are immediately available for experienced, preferably technically oriented, computer applications analysts/programmers. As a member of the Technical Applications Support Group, you will be involved in challenging assignments in support of our engineering and other technical departments.

Preferred candidates should possess:

- Minimum 2-5 years of technical programming experience or equivalent credentials. Oil & Gas industry experience desirable.
- High proficiency in use of IBM OS and/or VM computer systems (MVS, CMS, TSO, FORTRAN, PL/I, JCL, Utilities, PANVALET, FOCUS).
- BS degree in mathematics, engineering, or other industry-related technical profession.
- Willingness to accept domestic/foreign travel assignments of short duration.

Responsibilities include:

- Interact with units in MEPSI and other worldwide divisions within Mobil to interpret application needs and provide user support.
- Design, develop, implement, and maintain computer programs supporting the various technical departments.
- Write user/programmer support documentation.

Mobil offers the salary and comprehensive benefits package that you expect from an industry leader. Qualified candidates should send their resume to: Carol Redeker, Employee Relations, Mobil Exploration & Producing Services Inc., Dept. CW 123, P.O. Box 900, Dallas, Texas 75221.

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# ADVISORY SYSTEMS ENGINEER AND SR. SYSTEMS ENGINEER

***Become associated with a firm which recognizes excellence in its employees and rewards accordingly.***

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Our information sciences organization in Tampa, Florida, is responsible for the development and deployment of architecturally compatible hardware/software systems integrating voice, data and text in a distributed data environment utilizing end user computing and intelligent workstations.

*We are interested in individuals with:*

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- Capability to perform with minimal direction
- Demonstrated leadership qualification in Information Management techniques
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### Advisory Systems Engineer - Telecommunication Planning

5-8 years experience in:

- Voice Networking Strategies
- Data Networking Strategies
- Simulation Modeling
- SNA Networking
- X.25 Networking
- Satellite Communications
- LANS
- Network Management

### Sr. Systems Engineer - Data Administration

3-5 years experience in:

- Logical Modeling
- Userview Consulting
- Data Standardization Consulting
- Logical Model Synthesis
- Information Center Consulting
- Global Model Consulting
- Information Systems Planning
- Data Administration
- Data Security
- Dictionary Administration

Candidates should have a masters or bachelors degree preferably in Mathematics, Computer Sciences, Engineering, or equivalent.

Please submit a detailed resume with salary history to N. Fitzpatrick, Personnel Representative, Dept. CW, GTE Data Services, P. O. Box 1548, DC 136, Tampa, Florida 33601. An Equal Opportunity Employer.

## GTE Data Services





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Data Processing

## Explore The Infinite Boundaries Of Telecommunications With Northern Telecom In North Carolina

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**Data Base Analyst:** Requires BSCS or equivalent with 4 years experience in data base design and administration utilizing IBM 370 and HP 3000. (1130-JD)

**Data Base Manager:** Requires BSCS or equivalent with 10 years experience in data base design and administration utilizing IBM 370 and HP 3000. (1130-JD)

**Senior Systems Analysts:** Requires BSCS or equivalent and 5-plus years experience in manufacturing systems utilizing HP 1000. (1140-JD)

**Engineer-CIM:** BSCS/Math or equivalent and a minimum of 3 years experience in computer integrated manufacturing applications. Distributed systems graphics and IMAGE experience a plus. Familiarity with HP 3000 desired. (1130-JD)

**Senior Engineer-CIM-CAD/CAM:** Requires BSCS/EE or equivalent, MS preferred, and a minimum of 5 years experience in CAD/CAM and the use of robotics. Familiarity with machine vision and computer controlled industrial processes desired. (1130-JD)

**Senior Engineer-CIM-Computer Communications:** Requires BSCS/EE or equivalent, MS preferred, and a minimum of 5 years experience in the implementation of computer communications. Requires at least 3 years experience in HP distributed systems, specifically DS-1000. Knowledge of HP 1000 RTE internals strongly desired. (1130-JD)

**Senior Staff Engineer-CIM:** Requires BSCS or equivalent, MS preferred, and a minimum of 5 years experience with large real time systems. Familiarity with distributed systems and strong system integration skills are essential. HP 1000 experience desired. (1130-JD)

North Carolina is a place where you can enjoy the high-technology challenge along with a scenic drive in the gently rolling hills, the sight of early morning mist among the pines and the quiet beauty of the nearby Smokies. We'll pay for your relocation and provide you with competitive compensation. Send your resume in confidence to the address below.

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If you're a self-starter who feels a career is worth a little extra effort and have 4-10 years experience in designing, programming and installing manufacturing, marketing or financial applications, we're interested in interviewing you. S/34 and MAPICS experience a plus. Programming languages: COBOL, RPG and BASIC.

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Division of Sybron Corp.  
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### DIRECTOR COMPUTING AND INFORMATION SERVICES THE UNIVERSITY OF GEORGIA

The University of Georgia invites applications and nominations for Director of the Office of Computing and Information Services. Responsibilities include management of the computing facilities (an IBM 3081D, two IBM 370/158 AP systems, two VAX 780's, a CDC CYBER 825, a CDC CYBER 750, and a CDC CYBER 205), and a staff of 95. Qualified applicants should have at least five years supervisory and managerial experience in a large academic computing facility, a working knowledge of telecommunication networks and distributed data processing, appropriate technical background in computer systems and their uses, excellent oral and written communications skills, and should hold a degree from a recognized institution of higher education. Please submit resume, with references and salary requirements, postmarked by March 1, 1984 to: Dr. James B. Kenney, Chairman, Screening Committee; Assistant to the President-Administration; The University of Georgia; Old College; Athens, GA 30602.

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- P/A - MVS/CICS/BANKING 28K
- TECH SUPP - GCOS 3 or 8/L66 30K
- PROG SUPR - DOS/VSE/HOSPITAL 30K
- P/A - SYS/34 - MAPICS - RPG II 23K
- DBA - IMS and standards 35K
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Degreed professional with 5 years' data processing experience to supervise systems programming team, monitor system performance, maintain computer security and assist in hardware/system software selection and implementation. B.A. degree.

#### MANAGER, APPLICATIONS DEVELOPMENT

Full responsibility for corporate applications development. Must have 5 years' experience as skilled manager with heavy project planning, capable of supervising a team of systems analysts and programmers. Perform project planning, estimating and control. B.A. degree.

#### MANAGER, HARDWARE AND COMMUNICATIONS

Hardware and communications expert with a B.S. or B.A. in electronics and experience in the computer field to manage technicians team installing and maintaining computer, peripheral, telephone and communications equipment in our Costa Mesa based corporate office and area offices nationwide.

#### SYSTEMS PROGRAMMER

Thorough understanding of VAX internals to create and maintain system software, utility programs and application subroutine libraries. Will perform data base design, monitor overall system performance and provide technical assistance to the application programming staff.

#### SENIOR SYSTEMS ANALYST

Surveys, identifies and evaluates user requirements including developing building/contractor applications, requirements, program specifications, schedules, training materials, support and maintenance. Must be experienced in make/buy decisions and vendor negotiations.

#### PROGRAMMER/ANALYST

Performs detailed program design and implementation. Ability to assist in systems specifications and design preparation desirable.

#### SUPERVISOR, COMPUTER OPERATIONS

Computer operations experience should include shutdown/startup and system/users maintenance. Requires 2 years' college, 5 years' data processing experience and 3 years as computer operations supervisor. Requires knowledge of DCL command language.

#### ELECTRONICS TECHNICIAN

Knowledge of digital circuits and familiarity with oscilloscope and data line monitor for troubleshooting and diagnosis. This position involves installation and maintenance of terminals, modems, data concentrators, printers and other digital equipment.

Please send resume with salary history to:

Donna Mize  
AMERICAN DIVERSIFIED COMPANIES  
3200 Park Center Drive - Suite 1500  
Costa Mesa, CA 92626

## SYSTEMS PROGRAMMER

### Southeast Location

Our company's outstanding growth in a manufacturing field has created an excellent career advancement opportunity for a Systems Programmer. This position includes responsibilities for installation, modification, and tuning of systems software, including: MVS, VTAM, JES, ROSCOE and TSO.

Qualified candidates should possess 3-5 years experience in systems programming, including exposure to IMS DB/DC systems, communications techniques and job entry subsystems.

We offer an excellent salary and benefits package. If your experience matches our requirements, we'd like to hear from you. For further information, send your resume and salary requirements to:

**CW-B4334  
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## Operations Manager

### Anchorage, Alaska

Planning Research Corporation, the world's largest diversified professional services firm currently has a position available for an Operations Manager to be based in Anchorage, Alaska.

Duties will include direct supervision over technical staff and all phases of operation including computer operations, tape library functions, data control functions and data entry functions. Experience on Burroughs medium systems is a plus but not required. Full range of benefits offered.

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### ASSISTANT DIRECTOR OF ACADEMIC SERVICES UNIVERSITY OF NEVADA SYSTEM COMPUTING CENTER

(Position located on the University of Nevada Las Vegas campus)

This professional position supervises full time professionals engaged in faculty instructional (academic consulting) and operation support (software and documentation) functions for the UNSCC's Academic site. The Academic site provides computing power for academic classes statewide, on machinery which includes a CDC CYBER 172, 2 Harris H-800's, and a DEC VAX 11/750.

The successful candidate will have at minimum a Master's Degree (with Ph.D. preferred) and significant computer experience in the area of educational delivery. Experience in software support, documentation functions, and the supervision of others will also be considered.

Application deadline: March 9, 1984.

(Position to be filled on or before July 1, 1984)

Send resume and salary requirements to:

Mark Reed, Acting Director  
University of Nevada  
System Computing Center  
Southern Nevada Facilities  
4505 Maryland Parkway  
Las Vegas, NV 89154

Copies of transcripts and three letters of recommendation will also be required for a complete application.

The University of Nevada System is an equal opportunity affirmative action employer, and does not discriminate on the basis of race, creed, color, sex, age, national origin, handicap, or veterans status in any program or activity it operates.

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We are looking for **Micro Specialists** to provide MICRO-POWERED / PASCAL, VAXELAN, and DEC-PRO-11 support to customers, sales reps, and field specialists.

To qualify for these positions, you should have a B.S. in Electrical Engineering, Math, Computer Science, or equivalent and at least 2-4 years' experience developing

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We are looking for **Laboratory Specialists** to provide support to engineers and scientists.

To qualify for these positions, you should have a degree in Electrical Engineering, Math, Computer Science, or equivalent and at least 2-4 years' experience developing software for scientific or real-time applications. You must have RSX-11 or VAX/VMS experience and knowledge of FORTRAN and BASIC. Knowledge of PC-350, PDP-11 hardware, or MACRO is desirable.

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Call (404) 953-0959, collect, Monday-Friday, January 23-27, from 9 a.m. to 5 p.m.

Or, if you can't call, send your resume to: Employment Office, Digital Equipment Corporation, Dept. 0123 3804, 360 Interstate North Parkway, Atlanta, GA 30339.

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CICS and IDMS experience a plus Systems configuration IBM 3033 MVS/SP, CICS, JES2 IDMS.

Please send resume with salary history in complete confidence to:

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**PEERLESS INSURANCE COMPANY**

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Located near Penn State University in beautiful central Pennsylvania mountains we offer an excellent fringe benefit package. Submit resume and salary history in confidence to:

Thomas J. Moyer, Manager  
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**CERRO METAL PRODUCTS**  
P.O. Box 388  
Bellefonte, PA 16823

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### The Right Career Choice!

## Dunhill Means Data Processing Professionals

At Dunhill of Charlotte our only business is finding the right people for the job. We represent many of the largest and most respected corporations across the country. That's why we can offer the busy data processing professional the opportunity to explore the job market without doing any more than simply sending us a resume.

We are not asking you to make any commitment. There is never a fee with Dunhill of Charlotte, and all matters are held in strict confidence. What more could you ask for? We will also keep you up to date on industry trends and current salary ranges in the DP area.

Keep your career running in high-gear by letting Dunhill of Charlotte find the opportunity you have been searching for as a professional. We want to go to work for you today! We specialize in the placement of Programmers, Analysts and Systems Programmers in the Carolinas and throughout the beautiful Southeast and Southwest. Give us a call now, or send your resume to:

Keith Reichle, CPC  
Data Processing Consultant  
6401 CARMEL ROAD  
SUITE 107  
CHARLOTTE, N.C. 28226  
1-800-438-2012  
In North Carolina, call collect (704) 542-0312

**Dunhill**

**of Charlotte, Inc.**

An Equal Opportunity Employer M/F



## POSITION ANNOUNCEMENTS

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- **SYSTEMS ANALYSTS**
- **ANALYST PROGRAMMERS**
- **PROGRAMMERS**
- **TECHNICAL SUPPORT**
- **FIELD ENGINEERS**
- **QUALITY ASSURANCE ANALYST**
- **TRAINING SPECIALIST**
- **SENIOR STAFF ANALYST**

We are changing the way America shops...through our "State of the Art" systems. Incorporated in 1970, we have grown to a "Fortune 500" Company with 158 Catalog Showrooms located in 31 states. Our revenues exceed 1.4 BILLION DOLLARS. A major factor in our remarkable growth has been the commitment to computer based "Total Systems Solutions."

We have opportunities for highly qualified EDP professionals in the following areas:

...**DATA BASE** - Design, Implementation and Data Administration in a DMIV-TP Environment

...**DISTRIBUTION** - Distributive Inventory Management, Transport Optimization, Automated Materials Handling, Space Utilization

...**SHOWROOMS** - In-store Inventory Management and Reporting, Financials, Personnel, State-of-Art Point-of-Sale with Complex Telecommunications Interfaces

...**FINANCIAL** - Fixed Assets, Cash Management, Automated Payables, General Ledger, Payroll, Accounts Receivable

...**MERCHANDISING** - Advertising, Replenishment, Product Class, Purchase Orders, Transfers

...**SYSTEMS SOFTWARE/PROGRAMMING** - Honeywell DPS-3 (Dual 6660's), DPS-8 (Dual 8/70's) under GCOS-4JS3, DPS-8/47 under GCOS 8-SR2300, DPS-6, and Stratus Non-Stop

...**PLANNING** - Both Hardware and Software - Resources Evaluation, State-of-the-Art Technology Assessment, Product Reviews, Long-Range Planning

...**QUALITY ASSURANCE ANALYST** - Perform QA reviews on new Development Projects, Develop and Implement Systems and Programming Standards

...**TRAINING** - Professional instruction for COBOL, BASIC, Structured Design, DM4-TP and Data Base Design

...**STAFF SUPPORT** - Provide Operational Analysis, Budget and Expense Control, Planning and Administrative Support to MIS Organization

Applicants with college training in Computer Science or Business Information Systems desired, and a minimum of 2 years experience in Systems and Programming. Proficiency in BASIC and COBOL is required.

We also have openings for qualified

- **FIELD ENGINEERS**

The successful candidates will have experience with Hard Disks and Digital Logic Circuits.

We offer an above-average salary, commensurate with experience. Our Benefits Package includes Major-Medical, Hospitalization, Dental, Optical & Life Insurance, Retirement Plan, Profit Sharing, PAID RELOCATION, and much more.



## SERVICE MERCHANDISE COMPANY, INC.

Send confidential resume with salary history, to:  
**Daryl Searcy, Manager of MIS Recruitment**  
P.O. Box 24600 (CW)  
Nashville, TN 37202

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**SYSTEMS ANALYST** - Design & development of industry specific computer based decision support systems for industrial efficiency. Develop relational database for oil & gas companies using the QUEL/SQL languages. Use C language to integrate existing microcomputer software products. Design & develop an integrated oil & gas accounting system. Consultancy in executive workstations & microcomputers. Design & develop hardware & software support systems. Requires: M.S. degree of equiv. in Industrial Engineering. 1 yr job experience or 1 yr experience in related occupation of microcomputer software design necessary. Exp. with hardware & software support systems. Exp. in Decision Support Systems; knowledge of SQL/DL/QUEL languages; knowledge of C computer language; knowledge of Spreadsheet internals. Pays \$2500/month to work 40 hrs/5 days (9am to 5:30pm) per week. **APPLY TO:** Texas Employment Commission, Dallas Texas, or send resume to Texas Employment Commission, TEC-Building, Austin, Texas 78778. J.O. #2511244. Ad Paid by An Equal Opportunity Employer.

**APL** San Francisco  
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Atlanta  
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**UNIX & C** Northern Calif.  
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[Home of The Sunday News]

## The Best And The Brightest Data Processing Professionals . . .

... have always found solid rewards and diverse challenges at CIBER. We're a respected Data Processing Consulting Firm that delivers a variety of applications development and software conversion services to our customers across the nation.

Currently we have positions for those who can work in a vertical capacity meaning analysis, programming, implementation and documentation with emphasis toward IDMS, IMS, CICS and many other state-of-the-art packages.

At CIBER, we respect your talents and efforts and encourage you to advance in your career. Our promotion from within policy, excellent compensation and attractive benefits package provide the stimulation to achieve your career objectives.

Our branch offices are located throughout the United States: Atlanta, Chicago, Dallas, Denver, Detroit, Houston, Phoenix, Sacramento, St. Louis, and Tulsa.

Call us collect or send your resume to:

**Personnel Resources**  
67 E. Weldon, Suite 121  
Phoenix, Arizona 85012  
(602) 234-0411

# CIBER

## The Data Processor's Choice

### IBM PROGRAMMERS - ANALYSTS

The positions below reflect a portion of the active openings for which we are recruiting. They are with Fortune 500 and large regional firms across the country, with many openings in the Southeast.

<b>BANKING</b>	
Sr. Systems Analyst - Hogan-Cash Mgmt.	\$25-38K
Programmer/Analyst CICS (COMMAND & MACRO)	\$22-36K

<b>INSURANCE</b>	
Systems Analyst 5/7 yrs COBOL-IMS/VS, CICS/VS	\$28-40K
Programmer/Analyst 3/5 yrs COBOL-CICS/VS	\$22-30K

<b>MANUFACTURING</b>	
Senior Analyst OS/MVS COBOL - Mfg apps.	\$30-40K
Programmer/Analyst OS/MVS IMS/VS - Mfg apps	\$26-34K

<b>TECH. SUPPORT</b>	
Systems Programmer OS/MVS-GENS	\$30-38K
Systems Programmer - VM GURU	\$36-44K

Client companies assume all fees - including interviewing and relocation costs. Installations are "State of the Art" and offer excellent career path progression. Forward your resume now or call collect for additional information.



**"Steve" Stevenson, Partner**  
**Jim King and Associates**

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(904) 398-7371

### Software Promotion and Licensing Position Available

A Senior Research Engineer position is available for promoting, marketing, and licensing high-tech structural engineering and project management software. An M.S.C.E. degree is required. Five or more years experience in engineering/computer applications is required. Experience in business aspects of engineering computing and contracting is highly desirable. Salary commensurate with experience. Send resume, references, current salary, and availability information to: Dr. L. Z. Emkin, School of Civil Engineering, Georgia Institute of Technology, Atlanta, Georgia 30332. Georgia Tech is an Equal Opportunity/Affirmative Action Employer.

### Systems Programmer

National manufacturer in western Kentucky needs a Systems Programmer. Position requires 2 years of systems programming experience with DOS/VS and CICS. Experience with VM, COBOL, Assembler, process control and microprocessors would be beneficial.

Offering competitive salary, excellent benefits, and growth opportunity. Send resume and salary requirements to:

**CW-B4345**

**Computerworld**  
Box 880

**Framingham, MA 01701**  
An Equal Opportunity Employer

**CALIF. & UNIX\***  
Openings in a variety of areas and disciplines.  
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**CPU** COMPUTER PROFESSIONALS UNLIMITED, agency  
7411 Garden Grove Blvd.  
Ste. D, Garden Grove, CA 92641  
\*UNIX is a trademark of Bell Laboratories

## Central Region and Western Region Sales Manager

Growing CRT manufacturer seeking aggressive individuals with minimum of 5 years selling experience. Successful applicants will be responsible for sales to distributors, dealers, OEM's, and manufacturers' representatives. Heavy travel. Send resume and salary requirements to:

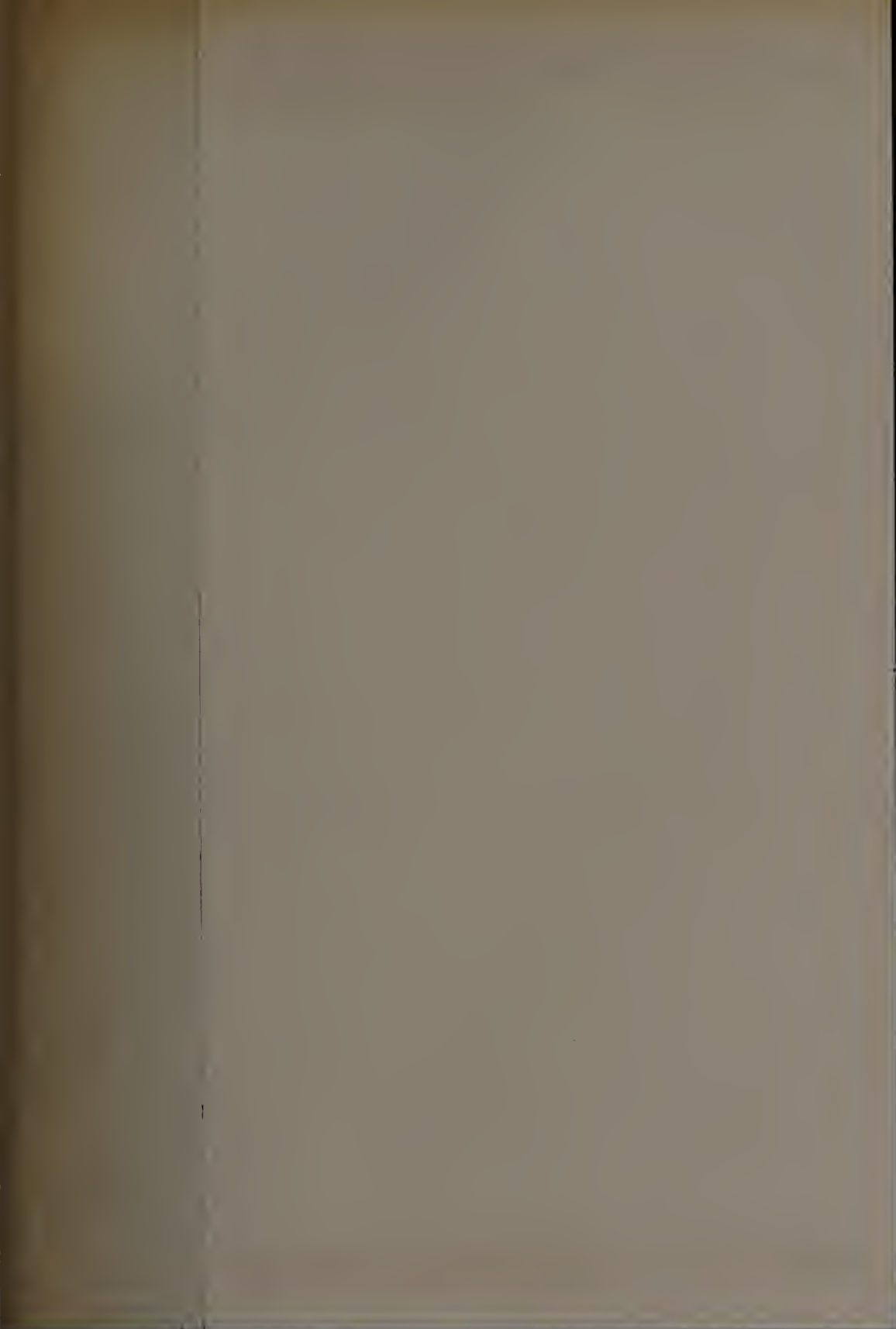
**Micro-Term, Inc.**  
**512 Rudder Rd.**  
**Fenton, Missouri 63026**  
Equal Opportunity Employer

### DIRECTOR OF INFORMATION SYSTEMS

American Council of Life Insurance seeks experienced individual to manage an expanding data processing operation and coordinate the planning and implementation of user oriented information and office systems throughout the organization. Experience with IBM System/38 required. Candidate must have demonstrated technical competence in computer operations, systems software and application systems development and maintenance. Additional requirements include minimum 7-10 years of data processing experience, prior management of equipment and manpower resources and proven ability to interact with top management. Salary commensurate with experience. Excellent benefits and downtown location convenient to subway. Send resume with salary requirements to:

**Personnel Department**  
**American Council of Life Insurance**  
**1850 K Street NW**  
**Washington, DC 20006**









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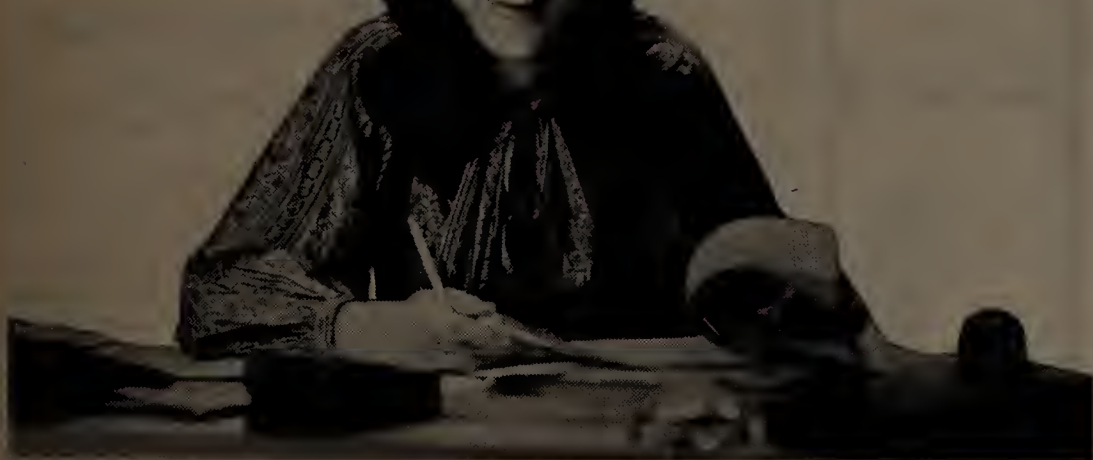
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**Cheryl Rossi**  
wanted to relocate...

**We made it easy for her.**



Cheryl had wanted, for a long time, to move to another city clear across the country. Her problem was that she lacked information about wage levels, cost-of-living expenses, housing, etc. Also, she was not sure of the best way to find a good EDP position in her preferred city.

She had gone to other placement firms that were not nationally structured to help her. Then she came to us... and we made it easy for her. We contacted our affiliated office in her preferred city, got all of the information she needed on wage levels, cost-of-living expenses, housing, etc. We also arranged five employment interviews for her. She accepted an EDP position she felt was ideal for her, and her new employer paid all her interview and relocation expenses.

We can do the same thing for you, as we have done for thousands of others. Come in. Call. Or mail your resume to the firm nearest to you. Confidentiality is assured. Company clients assume our fees.

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**CHICAGO:** Thos. Hirtz & Associates  
150 N. Wacker Drive, Suite 1700  
Chicago, Illinois 60606 (312) 977-1555

**COLUMBUS:** Michael Thomas, Inc.  
65 E. Wilson Bridge Road, Suite 201  
Worthington, Ohio 43085 (614) 846-0926

**DALLAS:** DataPro Personnel Consultants  
12720 Hillcrest, Suite 520  
Dallas, Texas 75230 (214) 661-8600

**DETROIT:** Electronic Systems Personnel, Inc.  
3000 Town Center, Suite 2580  
Southfield, Michigan 48075 (313) 353-5580

**FLORIDA:** Data Sciences Personnel, Inc.  
P.O. Box 8577  
Hollywood, Florida 33084 (305) 434-6112

**HARTFORD:** Compass, Inc.  
900 Asylum Avenue  
Hartford, Connecticut 06105 (203) 549-4240

**HOUSTON:** Career Consultants, Inc.  
2000 South Post Oak  
Houston, Texas 77056 (713) 626-4100

**INDIANAPOLIS:** Computer Personnel Services, Inc.  
107 N. Pennsylvania  
Indianapolis, Indiana 46204 (317) 634-4712

**KANSAS CITY:** D. P. Career Associates  
6405 Metcalf, Suite 502  
Shawnee Mission, Kansas 66202 (913) 236-8288

**LOS ANGELES:** Superior Resources, Inc.  
Personnel Service  
17141 Ventura Boulevard, Suite 200  
Encino, California 91316 (213) 986-4400

**MILWAUKEE:** EDP Consultants, Inc.  
7332 West State Street, Suite 3  
Milwaukee, Wisconsin 53213 (414) 475-0077

**MINNEAPOLIS:** Electronic Systems Personnel  
858 Twin City Federal Tower, 121 S. 8th St.  
Minneapolis, Minnesota 55402 (612) 338-6714

**NEW JERSEY:** Systems Search  
90 Millburn Avenue  
Millburn, New Jersey 07041 (201) 761-4400

**NEW YORK:** Botal Associates, Inc.  
7 Dey Street, Suite 410  
New York, New York 10007 (212) 227-7370

**NEW YORK UPSTATE:**  
CFA Associates Personnel, Inc.  
2530 James Street  
Syracuse, New York 13206 (315) 463-5225

**NORTH CAROLINA:** DataMasters,  
Div. of TaskForce, Inc., P.O. Box 6888  
Greensboro, North Carolina 27405  
(919) 373-1461

**PHILADELPHIA:** Systems Personnel, Inc.  
115 West State Street  
Media, Pennsylvania 19063 (215) 565-8880

**PHOENIX:** Professional Career Consultants  
4628 North 17th Street, Suite H101  
Phoenix, Arizona 85016 (602) 274-6666

**SAN FRANCISCO:** The Computer Resources Group,  
Inc. Agency, 303 Sacramento Street  
San Francisco, California 94111 (415) 398-3535

**SEATTLE:** Houser, Martin, Morris & Associates  
1940 116th Avenue N.E.  
Bellevue, Washington 98004 (206) 453-2700

**WASHINGTON D.C.:** ESP Systems Corporation  
914 Lamberton Drive  
Silver Spring, Maryland 20902 (301) 649-6171

Call the NCA firm nearest to you for Salary Survey and Relocation Information



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EDP Placement Firms in Baltimore, Cleveland and St. Louis can learn about the many advantages of being members of National Computer Associates by calling Jack Todd (602) 274-6666

## Applications Programmer/Analysts

The Computer Services Department of a major oil and gas firm is currently looking for several Applications Programmer/Analysts.

Candidates applying for either of the positions below should meet the following qualifications:

- A college degree in Computer Science, Mathematics or Business is preferred.
- A familiarity with a large scale IBM installation.

### COBOL PROGRAMMER/ANALYSTS

- 2-5 years experience in Business Applications utilizing COBOL is required.

•Good working knowledge of IBM JCL, TSO/SPF, PANVALET, IMS or ADF is a definite advantage.

### GRAPHICS PROGRAMMER/ANALYSTS

- 2-5 years experience in Graphics Applications utilizing FORTRAN or PL/I.

•A good working knowledge of IBM JCL, TSO/SPF, PANVALET, or D13000 is an asset.

Our client offers excellent starting salaries and career opportunities along with a convenient location in Southwest Houston. A comprehensive benefit package which includes health/dental insurance and savings/stock bonus plan is provided.

Please send resumes to file #0114, 7676 Woodway, Suite 264, Houston, Texas 77063. List separately any organizations to which your resume should not be sent, thus assuring your confidentiality.

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### FACULTY POSITIONS IN COMPUTER AND INFORMATION SYSTEMS BLOOMSBURG UNIVERSITY

The Computer and Information Systems Department at Bloomsburg University has full-time, tenure-track positions available in the Fall, 1984. Opportunities exist for teaching, curriculum development academic advisement and serving as department chairperson. Qualifications: an earned doctorate or an A.B.D. with a major in Information Systems; dissertation in the computer field; teaching and/or industrial experience desired.

Send detailed resume and names of three references to: Chairperson, CIS Search and Screen Committee, Bloomsburg University, May Building, Box 1704, Bloomsburg, PA, 17815 postmarked by April 15, 1984.

Bloomsburg University is located in Northeastern Pennsylvania. It is a one-hour drive to the Pocono Mountains, three hours to New York or Philadelphia and an easy drive to all of New England and Canada.

Bloomsburg University is an AA/EEOE. Minorities are especially urged to apply.

### Systems Programmer

A Research Scientist I position is available in the advanced systems development group of the GTICES Systems Laboratory at Georgia Tech. Applicants must have an undergraduate degree in Computer Science and demonstrable skills working with mini and micro computers and in the C programming language. Experience using one or more of the following computers will also be considered: IBM/MVS, DEC/VAX, DG/MV, HP/9000 and WICAT. Salary range is \$22,000 to \$27,000 depending upon experience. Applicants must be available starting in March 1984. Send resume (including names of references) and transcript of college grades to:

**Mr. David B. Green**  
School of Civil Engineering  
GTICES Systems Laboratory  
Georgia Institute of Technology  
Atlanta, Georgia 30332-0355  
*Georgia Tech is an Equal Opportunity/  
Affirmative Action Employer.*

## UNIX\*/C

**\$25,000 to \$50,000**  
APPLICATIONS & SYSTEMS  
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## SAUDI ARABIA

SYSOREX INTERNATIONAL, a California Corporation and a rapidly growing systems management company now developing innovative multi-technology systems in Saudi Arabia has the following challenging positions:

### DP PROJECT PLANNER

BS in computer science or related field, Minimum of 5 years experience involving data processing project planning, scheduling, customer relations, and management of computer operations or systems and programming groups. Must be familiar with CPM scheduling methods, project organization, presentation and training techniques. Must have demonstrated ability to work with senior management.

Responsibilities: develop and maintain detailed project schedules including computerized CPM schedules, distribute and explain project plans and schedules to project personnel, brief project manager on project status, and will assist project manager with liaison duties and client relations.

### MVS SYSTEMS PROGRAMMER

BS in Computer Science or equivalent curriculum required. Minimum 4 years experience as a MVS systems programmer. Responsible for SYSGEN and application of systems maintenance. Knowledge of VM and VS1 a plus.

We offer an excellent benefit package including: medical, life, accidental death, disability and profit sharing plans. You will additionally receive 25 working days vacation, 15 holidays, free furnished housing, annual return home travel, paid relocation expenses, plus eligibility for present Federal Income Tax exclusions.

Please send resume INDICATING POSITION TITLE FOR WHICH YOU ARE APPLYING with present salary, to Personnel CW-123, SYSOREX INTERNATIONAL, INC., 10590 N. Tantau Avenue, Cupertino, CA 95014. U.S. CITIZENSHIP REQUIRED. INDIVIDUALS ONLY APPLY.

## SYSOREX

Sysorex International Inc.





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# COMPUTER PROFESSIONAL Career Growth Stability near LAKE TAHOE

## SENIOR PROGRAMMER/ANALYST

We are seeking a computer professional able to interface with key users to design, code and implement business applications that run efficiently in an interactive environment on an IBM System/38 Model 7.

Someone with:

- Minimum 4-5 years GSD-related experience
- Strong RPG II/III skills
- Recent IBM System/34 or System/38 interactive experience required

Send resume and salary history to:

### BENTLY NEVADA

Electronic Instrumentation Manufacturer  
Attention: Personnel/Recruiting  
P.O. Box 157, Minden, NV 89423  
(702) 782-9330

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## Software Engineering Opportunities Spokane, Washington

Instrumentation Laboratory Inc., a leading designer and manufacturer of medical instrumentation, is currently seeking experienced SOFTWARE PROFESSIONALS.

Principal responsibilities include developing Pascal, PL/M and assembler software modules as part of a development group designing products for the clinical laboratory.

Individual will generate software module specifications and design, code and debug the same. Interfacing these modules with other system modules will also be required.

Qualified candidates should have a BS degree in engineering, mathematics or computer science. Candidate must have a minimum of 4 years' relevant experience. Familiarity with implementation of 8085 based system a plus.

If you are interested in this opportunity, please CALL COLLECT:

1-(509)-489-5409

Or, send your resume with salary requirements to: Tom Garrett, Instrumentation Laboratory Inc., North 3939 Freya, Spokane, WA 99207.



**Instrumentation Laboratory Inc.**

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## SOFTWARE BUYER

We are a fast-growing computer retailer with stores throughout the Southeast. We are seeking a Software Buyer with past experience in the Microcomputer industry or related Electronics field.

Good knowledge of industry trends and manufacturers required. Prior purchasing experience preferred. College degree desired.

We offer an outstanding salary and benefits.

## THE COMPUTER SHOPPE

Send confidential resume to:

Bill Calloway, V.P. of Recruitment  
P.O. Box 24600 (SB)  
Nashville, TN 37202

Equal Opportunity Employer M/F/H/V

## SALISBURY STATE COLLEGE

Applications are invited for tenure-track and temporary positions for Fall 1984. Applicants must be able to teach middle and upper level courses in information systems or computer science. Rank and salary depend on qualifications; good teaching is essential, as is a master's in computer science or a related area.

Salisbury is a small city in a rural area, close to ocean beaches and the Chesapeake Bay. Send resume to

Dr. Bill Collins, Chairman  
Computer Science Department  
Salisbury State College  
Salisbury, MD 21801

Salisbury State College is an equal opportunity/affirmative action employer. Women and minorities are encouraged to apply.

# Director Marketing (SOFTWARE SUBSIDIARY)

We are a newly formed subsidiary of The MILTON BRADLEY COMPANY, established to develop and market our own line of proprietary software products. Our small group has a ground floor opportunity for an executive to head up all sales, marketing and business development activities for this start-up operation.

Reporting to the subsidiary President you will have the prime sales responsibility, and will personally present to top management of client companies. You will also be responsible for generating marketing plans, including advertising and promotional programs. In addition, you will need to have a thorough understanding of systems from mainframe to micro, and be capable of contributing to the creative process by identifying new product opportunities to be developed. A solid background in software sales and development is required.

If you feel well qualified for this exciting opportunity offering a highly competitive compensation arrangement and excellent benefits, please forward your resume (NO PHONE CALLS, PLEASE) including salary history to:

JAMES G. KERSHNER  
Corporate Director  
Executive Recruitment

**MILTON BRADLEY COMPANY**  
P.O. Box 3400, Springfield, Mass 01101  
Equal Opportunity Employer M/F



## Programmer/ Analyst

We are a multi-company service industry group located in the Harrisburg, PA area. Currently we are seeking an experienced data processing individual to participate in the development of Medicare B systems design and program specifications. Additional responsibilities include participating in the conversion and implementation of customer files and systems to marketed products.

Requirements include the ability to effectively communicate with user personnel, a thorough knowledge of standard programming languages and current systems technology. Some travel is required.

We offer an excellent compensation package with advancement based on merit. Please send resume and salary history to:

CW-B4344, Computerworld  
Box 880 Framingham, MA 01701  
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### PROJECT LEADER/ DISTRIBUTION SYSTEMS

Industry leader offers excellent opportunity for extremely sharp degreed individual. Need indepth experience in systems design and analysis of distribution, warehousing and inventory control systems. Salary mid-30's plus home purchase. Mid-west.

### SENIOR SYSTEMS PROGRAMMER

Highly successful firm has immediate needs for Sr. Systems Programmer. Will lead conversion from DOS/VSE to OS/MVS. Need strong MVS experience and knowledge of CICS. Position will lead to management. Salary 36K plus 20% bonus. Mid-west location.

### PROJECT MANAGERS

Requires strong systems development in the areas of electronic fund transfer, demand deposits savings, time deposits or loans. Knowledge of CICS a plus salary 35-45K. Mid-west location.

### SR. SYSTEMS ANALYST

Industry leader needs Sr. CICS expert. Requires ability to supervise strong communications skills. 5 years online CICS design and working knowledge of Database. Mid 30's Mid-west.

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ALL INQUIRES  
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Systems Programmer to \$40K  
MVS/JES-3, IMS, CICS  
Systems Programmer to \$35K  
IBM 4300 DOS/VSE-E, CICS/VS  
Software Engineer to \$35K  
Data Communications Exp.  
Programmer/Analyst to \$30K  
VAX 11/780 Exp.  
Programmer/Analyst to \$30K  
Burroughs Mainframe  
**GEN BAUGHER & ASSOC.**  
650 University Ave, #101  
Sacramento, CA., 95825

## DALLAS

### MGR/PROG

Several elite Dallas firms need S/34, S/38 coding expertise to serve as mgr/programmer. Salary to \$32 - 38K. Send resume Richard Kemmerly:

2720 Stemmons Frwy 1207F  
Dallas, TX 75207 (214) 637-6360

**DATA PROCESSING  
CAREERS**

## Software Development

Come see and ski beautiful SW Michigan. DIS is an engineering/systems house looking for software talent to staff exciting custom engineering projects. You must have 1-2 years experience in systems design and development on DEC mini/micro systems. Fortran a must, Pascal a plus. Career growth opportunities are unlimited in our growing company. Send resume in confidence to:

**Digital Interface Systems, Inc.**  
Personnel Administrator  
P.O. Box 703  
St. Joseph, Michigan 49085  
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PAGES OF  
COMPUTERWORLD**



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At Control Data,  
Success has many  
directions for...

## Distributed Data Base Management System IBM Environment

VM/SP, CMS, MVS, PL/1, and Assembler

Control Data Corporation, on the San Francisco Peninsula, is looking for a few highly qualified professionals to design and develop a Distributed Data Base Management System. This system is to be implemented on IBM 303X, 43XX and IBM PC class machines utilizing our own packet network. We are looking for:

- Systems Architects
- Lead Programmers
- Programmers

Candidates require a minimum of 5 years' experience in the design and development of DATA BASE MANAGEMENT SYSTEMS, as well as experience with high level procedure languages and language design.

Control Data offers a competitive salary plan. Our benefits package includes health and dental insurance and tuition reimbursement. Take advantage of a career opportunity. Please call, visit or submit your resume to **Tony Perez, Control Data Corporation-Data Services, 700 West Hamilton Ave., Campbell, CA 95008 (408) 866-3146.**



Addressing society's major unmet needs  
as profitable business opportunities.

An Affirmative Action Employer

## EDP PROFESSIONALS

GROWMARK, Inc., a medium-sized agricultural firm, has immediate openings for qualified professionals seeking careers in a number of areas within Data Processing. Located in Bloomington, Illinois, a white-collar, two university community with excellent schools, shopping, recreational and cultural opportunities, we can offer challenging opportunities in the following areas:

### TECHNICAL SPECIALIST

Responsibilities include installing, monitoring and maintaining vendor-supplied software. An ideal candidate would possess 3-5 years' experience with Honeywell GCOS-3 operating system in addition to being familiar with TDS, TP, database and communications.

### PROGRAMMER/ANALYST

Responsibilities include programming in support of new development projects in addition to maintaining existing applications. An ideal candidate would possess at least two years' experience in a Honeywell environment, have the ability to write COBOL programs and possess knowledge of structured programming.

### APPLICATION SPECIALIST

Responsibilities include system design and complex programming assignments in support of new development projects and existing applications. An ideal candidate would possess strong programming skills and/or design experience in addition to Honeywell background. Prior experience in data base and online transaction processing is desirable.

These positions offer excellent growth opportunities in addition to a competitive salary and benefit package. Interested candidates should send resume and salary requirements to:

Manager, Corp. Personnel  
1701 Towanda Avenue  
Bloomington, IL 61701  
(309) 557-2416

AN EQUAL OPPORTUNITY EMPLOYER



**GROWMARK INC.**  
SUPPLIES DIVISION

### Systems Programmers Applications Programmers Manager for Network Services

Syracuse University announces the availability of positions for highly motivated people in its Academic Computing Center and its new CASE Center (Computer Applications and Software Engineering). The CASE Center is dedicated to industrial collaboration in research and education leading to the wider use of computer technology. The Center is designed to promote academic excellence and technological innovation in two principal areas: computer-enhanced reasoning and computer tools research in artificial intelligence. The systems used here are VM/CMS and MVS on three IBM 4341 computers, with a large mini/micro/terminal network. Applicants for the programming positions must have a minimum of one year experience. VM/CMS experience is desirable; bachelor's degree preferred. Applicants for Manager of Network Services should have a minimum of 5 years experience with computer communication protocols, hardware, and software. Knowledge of computer networking essential. Supervisory experience desirable. Syracuse University's benefits include competitive salaries, advanced degree opportunities, dependent scholarships, and generous vacation and retirement plans. Closing date for applications is February 10, 1984. Send resume to: **CASE Search Committee, Syracuse University, Personnel Department, Skidup Office, Syracuse, New York 13210.** Syracuse University, located in beautiful and culturally rich central New York, is an Equal Opportunity Affirmative Action Employer.

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### Sr. Software Engineers: Language Tools Development

You will be involved with developing compiler code optimizer, linker, or debugger. Requirements include two to five years' of language tools development experience; including knowledge of "C", Pascal, FORTRAN, and UNIX.

### Sr. Software Engineers: UNIX System Architect

You will be defining a version of SYSTEM V for NS16032 and NS32032. Two-to five years' experience in UNIX kernel development is desired.

### Sr. Software Engineers: UNIX Kernel Development

You will work on porting Berkeley 4.2bsd to NS16032 and NS32032 based microcomputer systems. Two to five years' experience in UNIX kernel development is desired.

### Sr. Software Engineers: Networking

You will work with developing/porting networking software under Berkeley 4.2bsd on NS16032 and NS32032 based microcomputer systems. Two to five years' experience in networking protocol design and development is desired.

### Software Engineers: UNIX Utilities Porting and Development

You will be involved with porting and developing UNIX utilities. One to five years' experience in UNIX is desired.

## The Rewards Of Elegance.

The elegance and power of the NS16000 will become evident as more software is developed for it. And those who develop that software will reap the rewards, personally and professionally. That's definitely something to think about if you're ready to take on the challenge of our opportunities.

To learn more about National's Microprocessor Systems Division, send your resume to Dept. MS, National Semiconductor, P.O. Box 62499, Sunnyvale, CA 94088. We are an equal opportunity affirmative action employer. Principals only please.

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Large Detroit area manufacturing operation has immediate openings for an individual knowledgeable and experienced in VAX/VMS system. VAX-11 Fortran and Macro programming languages. 1-2 years experience in using RMS systems services, and RTL. Additional experience with computer graphics, database, Pascal and data base management systems is desirable. Responsibilities will include systems and application programming. This position is in an innovative, creative environment working with a small group of fellow professionals. We offer a unique package of benefits and career growth options. Salary commensurate with background and experience. Qualified applicants may submit their resumes and salary history/requirements in confidence to: **The Valeron Corporation, Attn: Dwight Jerry, Personnel Department, P.O. Box 3950-P, Troy, MI 48007.** An Affirmative Action Equal Opportunity Employer Males and Females are encouraged to apply.

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Zayre Corporation, a Fortune 500 company, is presently seeking three experienced individuals for its corporate staff to support its operating systems, IMS Data Base Systems and Applications Development Systems.

We are a state-of-the-art leader in Data Processing, located in Framingham, MA, just 25 minutes from downtown Boston. We are a growing company that has earned a reputation as both an innovator and a leader in the American Discount industry (of which Data Processing has played a major part).

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Our Operating Systems Support Group (OSSG) is seeking an MVS System Programmer with a minimum of 4 years experience to provide technical guidance in the efficient use of our systems software and hardware. Successful candidates should have knowledge of the MVS operating systems software and performance tuning skills. A knowledge of IMS/DC internal is needed and knowledge of VTAM and NCP communications is helpful.

### IMS Data Base Specialist

Our Data Base Systems Support Group (DBSG) is presently seeking an experienced individual who is ready to move into a new sphere of challenge that will enhance his or her career and creativity in the world of data base design and usage. To qualify you must possess at least 4 years of experience in the design, analysis and Technical Support of IMS/VS Data Base applications. Your duties will include IMS support in all application systems development, logical and physical DU/1 Data Base design and implementation, problem determination, on-line screen design using MFS and the use of various IMS utilities.

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**Please send your resume to Ms. Jenny Dalrymple-Hay at Dalroth and Partners Ltd., 4 Half Moon Street, Mayfair, London W1Y 7R1, England or Contact on UK 1.493 2947 quoting Ref. 5037.**

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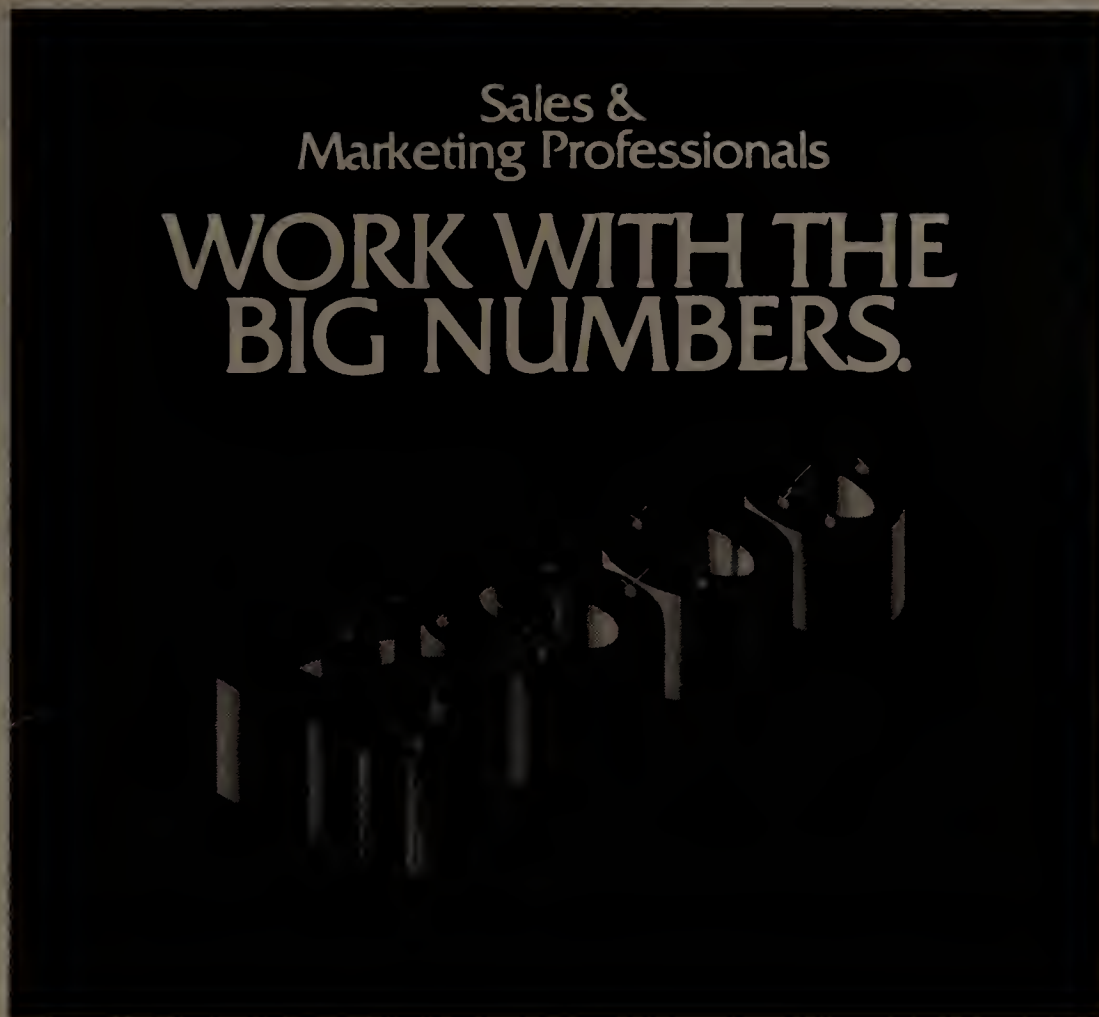
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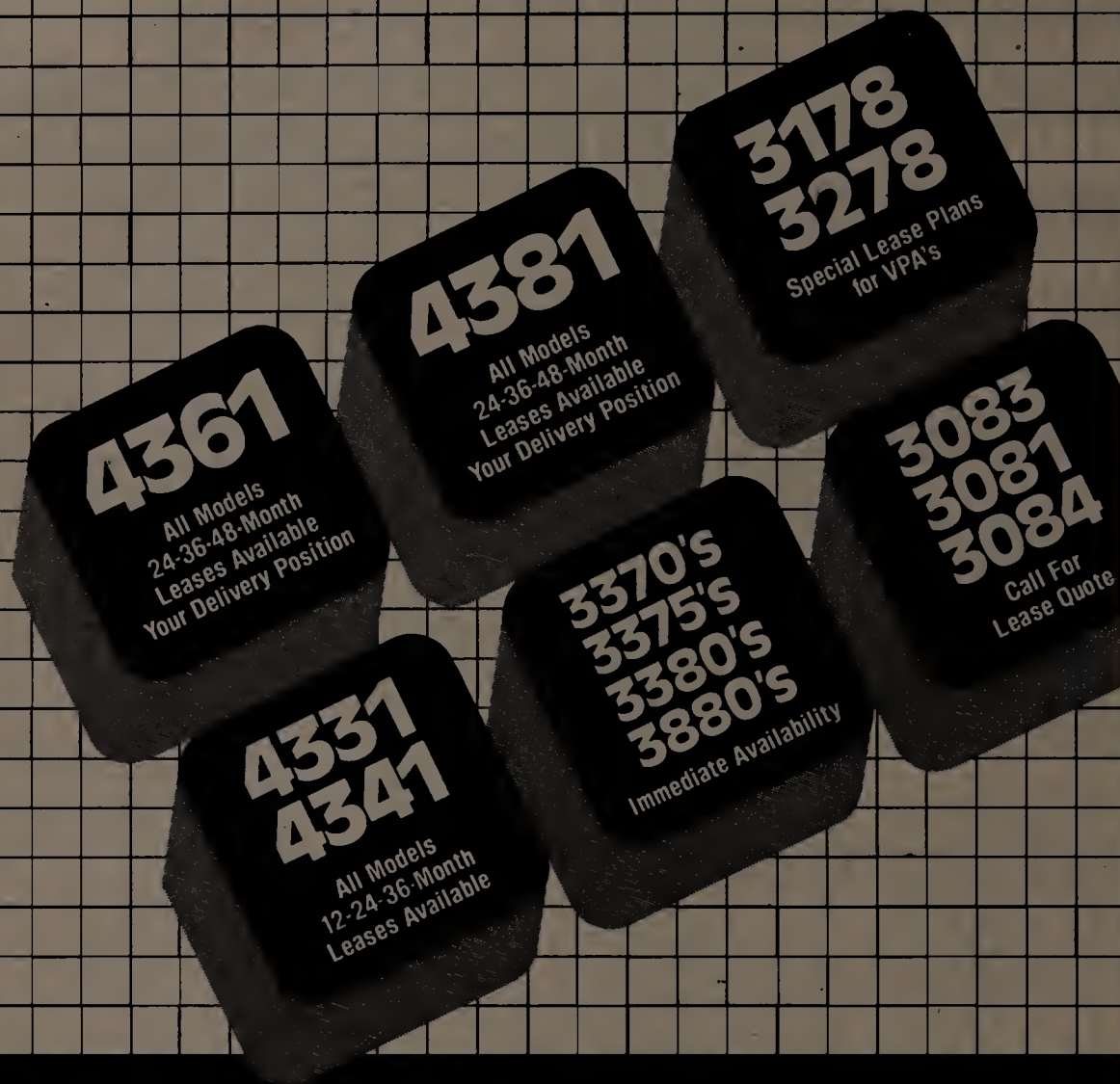
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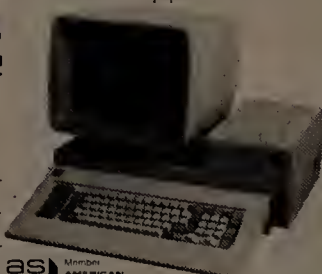
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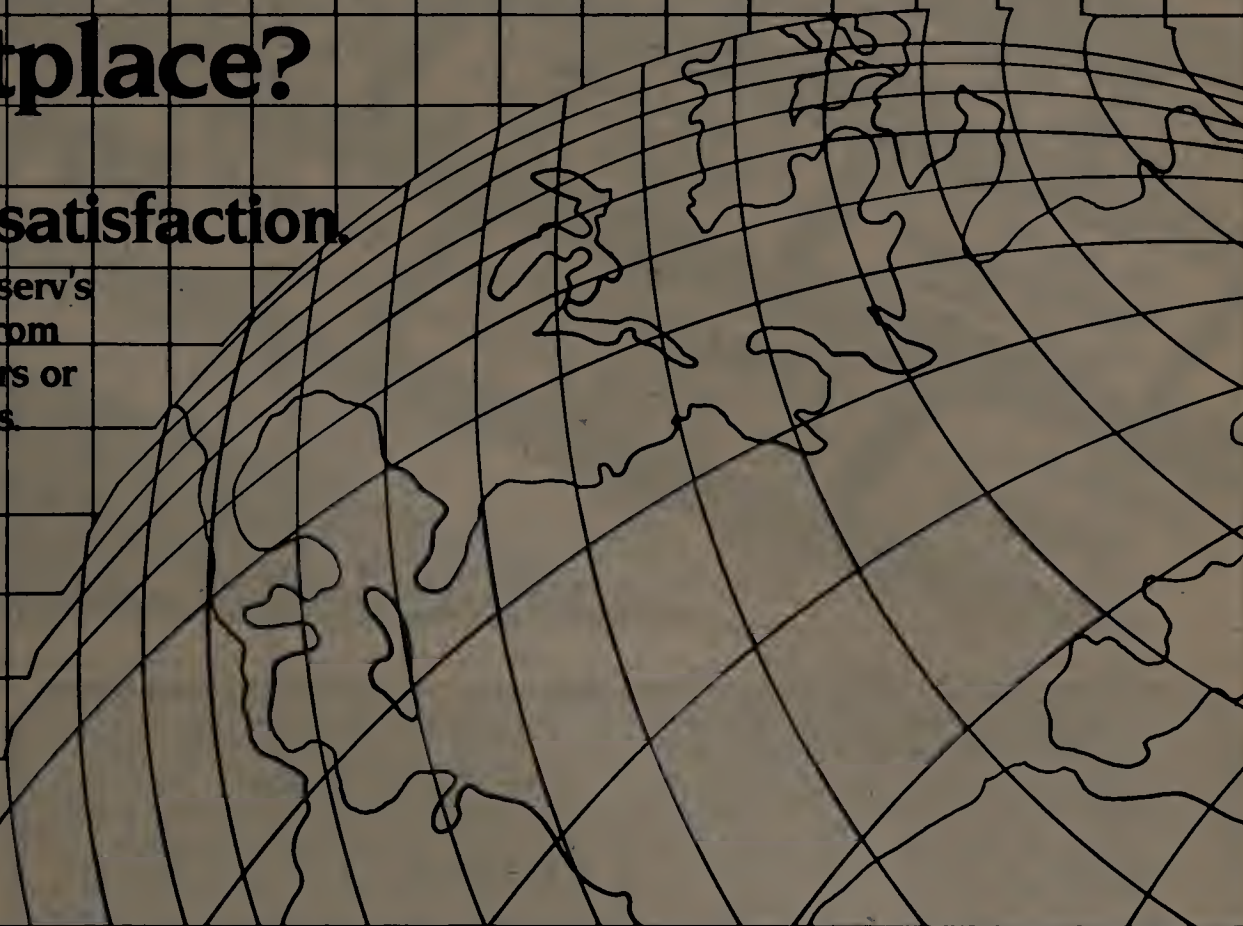
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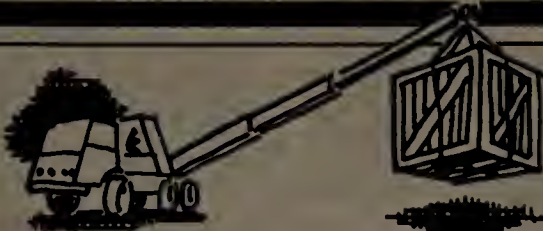
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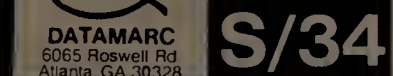
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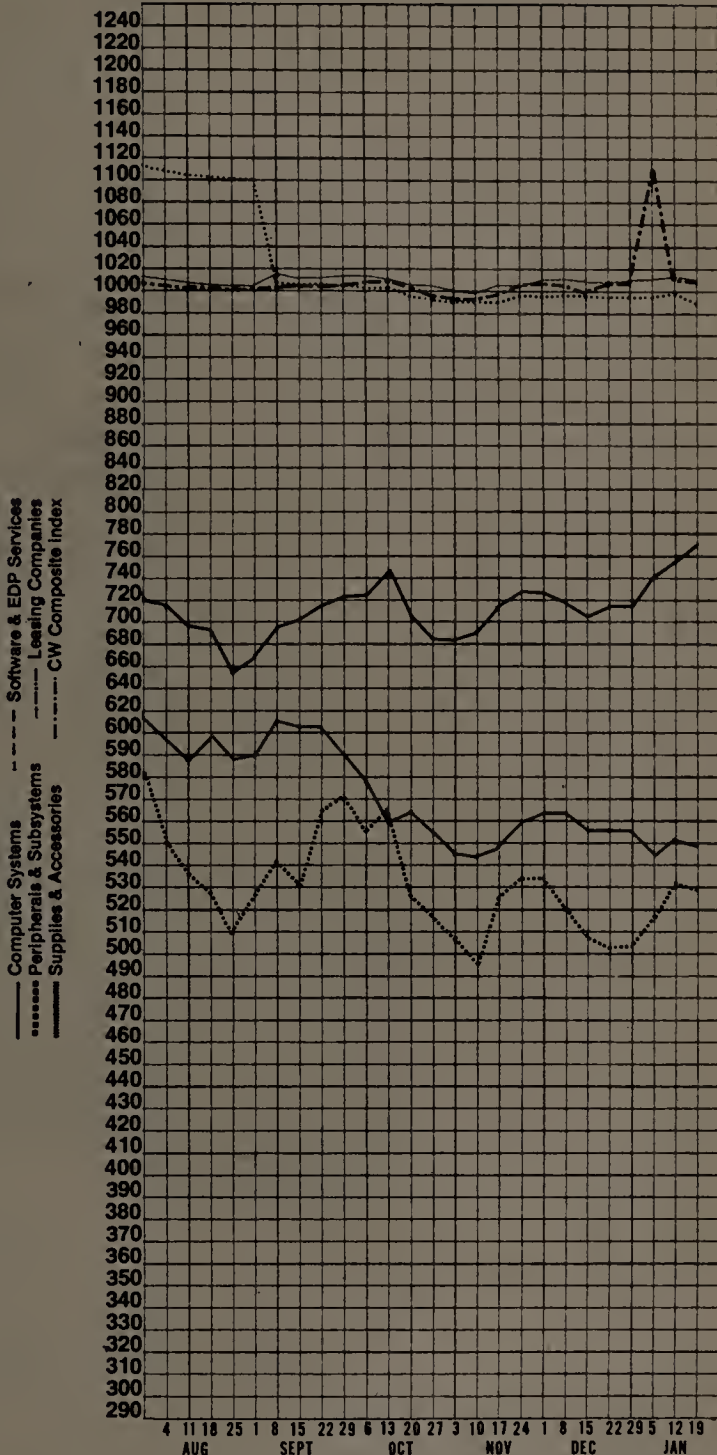
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Computerworld Stock Trading Index



Computerworld Stock Trading Summary

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1983-84						PRICE					
E	X	C	H	RANGE	1984	CLOSE	CHNGE	WEEK	WEEK		
										NET	PCT
COMPUTER SYSTEMS											
O	ALPHA MICROSYSTEMS	11-24	17	-1/2	-2.8						
O	ALDOS COMPUTER SYST	8-28	11 1/2	-1/4	-2.1						
A	AMDAHI CORP	9-30	18 1/2	+3/8	+1.9						
O	APPLE COMPUTER INC	18-63	28 3/4	+3/4	+2.8						
N	AT&T	60-70	66 5/8	+1 5/8	+2.5						
N	BURROUGHS CORP	28-58	51 1/4	-1/4	-0.4						
O	COMPUTER AUTOMATION	6-17	9 1/4	+3/4	+8.8						
A	COMPUTER CONSOLES	8-26	18 5/8	-5/8	-3.2						
N	CONTROL DATA CORP	21-62	48	+1 1/2	+3.2						
O	CONVERGENT TECHNOL	18-41	26 3/8	-3/8	-1.4						
N	CRAY RESEARCH INC	20-58	57 3/4	+3/8	+0.6						
N	DATA GENERAL CORP	10-47	47	+4 1/2	+10.5						
N	DATAPoint CORP	11-36	26 3/4	-1 7/8	-6.5						
N	DIGITAL EQUIPMENT	62-132	88 5/8	+14 3/8	+19.3						
A	EEDC INC	8-16	13 3/4	0	0.0						
N	ELECTRONIC ASSOC.	5-15	8 5/8	+3/4	+9.5						
N	FLOATING POINT SYST	16-44	34 1/4	-1 3/8	-3.8						
N	FOXBORO	22-47	38	+1/8	+0.3						
O	GENERAL AUTOMATION	3-16	13 3/8	+1/8	+0.9						
N	GOULD INC	26-44	35 1/2	+1 5/8	+4.7						
N	HARRIS CORP	20-51	41 7/8	+2 3/8	+6.0						
N	HEWLETT-PACKARD CO	22-48	44 5/8	+3	+7.2						
N	HONEYWELL INC	60-138	128 3/4	-3 1/4	-2.4						
N	IBM	57-134	120 1/2	-1 3/4	-1.4						
O	IPL SYSTEMS INC	5-14	5 3/4	-1/2	-8.0						
N	M/A-COM INC	19-35	20 7/8	-1/8	-0.5						
O	MAGNUSON COMP SYST	1-5	3/8	0	0.0						
N	MANAGEMENT ASSIST	7-22	20 3/4	+2	+10.6						
N	MATSUSHITA ELEC (ADR)	47-88	81 1/2	-3/8	-0.4						
N	MODULAR COMPUTER SYS	6-18	8	+1/2	+5.8						
N	MOHAWK DATA SCI	10-19	16 3/8	+1/2	+3.1						
N	MOTOROLA INC	82-148	133 1/4	-2 1/8	-1.5						
N	NAT'L SEMICONDUCTOR	15-80	18 3/8	+1/8	+0.6						
N	NCR	39-136	130	+7/8	+0.6						
N	PERKIN-ELMER	17-37	30 3/4	+1	+3.3						
N	PRIME COMPUTER INC	11-30	21 1/8	+2 1/4	+11.9						
N	SPERRY CORP	21-50	48 1/4	-5/8	-1.2						
O	TANDY COMPUTERS INC	14-40	37 1/2	-2	-5.0						
N	TANDEM CORP	34-65	37 5/8	+7/8	+2.3						
O	TELEVIDEO SYSTEMS	14-41	16	+1/4	+1.5						
O	TELXON CORP	9-16	9 3/4	-5/8	-6.0						
N	TEXAS INSTRUMENTS	71-176	141 1/8	+2 1/8	+1.5						
A	ULTIMATE CORP	8-24	20 3/8	+1 1/2	+7.9						
O	VECTOR GRAPHICS INC	2-14	2	0	0.0						
A	WANG LABS "B"	13-42	35	-1	-2.7						
A	WANG LABS "C"	11-42	34 3/4	-1 3/8	-3.8						
N	XEROX CORP	35-52	49 3/4	-3/8	-0.7						
LEASING COMPANIES											
O	BOOTHE FINANCIAL CP	11-35	34	-1/4	-0.7						
N	COMDISCO INC	7-42	14 5/8	-6 1/8	-29.5						
O	CONTINENTAL INFO SYS	3-18	7 3/4	-1 1/4	-13.8						
N	DFF INC	5-15	14 3/4	+7/8	+6.3						
N	U.S. LEASING	18-47	36 5/8	+1/4	+0.6						
COMPONENTS											
N	ADVANCED MICRO DEV	13-37	35 3/4	+1/8	+0.3						
O	ADV'D SEMICONDUCTOR	12-38	36 3/4	-1	-2.6						
N	ANALOG DEVICES INC	18-42	37 5/8	-1 1/8	-2.9						
O	ANALOGIC CORP	20-27	23 1/4	-1 3/4	-7.0						
N	APPLIED MAGNETICS CP	19-37	27 1/4	-1 1/8	-3.9						
N	TERADYNE	14-39	38 1/2	-1/8	-0.3						
SOFTWARE & EDP SERVICES											
O	ADVANCED COMP TECH	1-8	3 3/4	-1/4	-6.2						
O	ADVANCED SYSTEMS INC	6-22	19 3/4	-1 1/4	-5.9						
O	AGS COMPUTERS INC	7-32	28 3/4	+1	+3.4						
O	AMERICAN SOFTWARE	17-31	18 3/4	+1/4	+1.3						
N	ANACOMP INC	5-23	5 5/8	+1/2	+8.7						
O	ANALYSTS INTL CORP	5-20	12 3/4	-3/4	-5.5						
A	APPLIED DATA RES.	8-37	30 5/8	+1 1/4	+4.2						
O	ASK COMPUTER SYSTEMS	6-21	18	0	0.0						
B	ASTRADYNE COMP IND	1-7	2 3/4	-1/4	-8.3						
N	AUTOMATIC DATA PROC	21-44	38 1/4	+1 3/4	+4.7						
O	CGA COMPUTER ASSOC	5-17	12	-3/4	-5.8						
O	COMPUTER ASSOC INT'L	6-35	27 1/4	-1/2	-1.8						
O	COMPUTER HORIZONS	8-20	15 1/4	+1/4	+1.6						
O	COMPUTER NETWORK	4-10	7 1/4	-1/8	-1.6						
N	COMPUTER SCIENCES	11-22	21	+1/2	+2.4						
O	COMPUTER TASK GROUP	8-22	16 1/2	+1 1/2	+10.0						
O	COMPUTER USAGE	2-22	11 7/8	-1 7/8	-13.6						
O	COMPUTONE SYSTEMS	5-38	7 1/2	-3/4	-9.0						
O	COMSERV CORP	5-20	7	+1/2	+7.6						
O	COMSHARE	7-14	11 3/4	-3/4	-6.0						
N	CULLINET SOFTWARE	12-50	39 1/8	-1 3/4	-4.2						
O	CYCARC SYSTEMS INC	9-27	19	0	0.0						
N	ELECTRONIC DATA SYST	10-42	32 1/2	-2	-5.7						
O	HOGAN SYSTEM INC	18-55	22 3/8	+3/4	+3.4						
N	GENERAL ELECTRIC CO	45-59	50 3/4	-1 1/8	-1.8						
N	GTE CORP	39-48	43	-1/4	-0.5						
N	INFORMATICS INC	10-34	22 3/4	+1 1/2	+7.0						
O	INFOTRON SYSTEMS COR	25-43	38	+1	+2.6						
O	KEANE ASSOCIATES	4-15	8 1/2	+1/4	+3.0						
A	LOGICON	8-31	29 1/2	+1/8	+0.4						
O	MCI COMMUNICATIONS	13-34	15 3/4	+5/8	+4.1						
O	MNGT SCI AMER INC	8-33	21 3/4	-1 1/4	-5.4						
O	MATHEMATICAL APP GRP	10-22	11 1/2	0	0.0						
O	MICROM SYSTEMS INC	25-50	44 3/4	-2	-4.2						
O	MODCHIK-WEBER CP	--	9	0	0.0						
O	NATIONAL DATA CORP	5-26	19 1/2	+3/4	+4.0						
O	ON-LINE SOFTWARE INT	17-27	17	0	0.0						
O	PANSOPHIC SYSTEMS	8-30	19 3/8	-1/2	-2.5						
N	PLANNING RESEARCH	6-21	16 1/4	-7/8	-5.1						
O	POLICY MGMT SYSTS CP	15-35	28 3/4	-1/2	-1.7						
O	PROGRAMMING & SYS	1-8	5 1/8	0	0.0						
O	REYNOLDS & REYNOLD	17-53	39 1/2	-3/4	-1.8						
O	SEI CORP	11-34	25 1/2	-1	-3.7						
O	SHARED MEDICAL SYST	13-43	31 1/4	-2 1/4	-6.7						
O	SCIENTIFIC COMPUTERS	6-14	11	-1/4	-2.2						
O	SOFTWARE AG	5-17	13 1/8	-3/8	-2.7						
N	TYMSHARE INC	12-30	20 1/2	-1 3/8	-6.2						
A	URS CORP	5-18	14 3/4	+1/8	+0.8						
N	WVLY CORP	7-17	10 5/8	-1/8	-1.1						
PERIPHERALS & SUBSYSTEMS											
P	AM INTERNATIONAL	2-7	4 3/8	-1/8	-2.7						
A	ANDERSON JACOBSON	9-26	10 1/4	-1 1/4	-10.8						
O	AUTO-TROL TECHNOLOGY	8-29	24 5/8	-1/2	-1.9						
O	BANTEC INC	7-33	15	-3/4	-4.7						
A	BEEHIVE INT'L	4-15	9	+1/4	+2.8						
N	BOLT-BERANEK & NEW	5-30	24	-1	-4.0						
O	CAMBEX CORP	1-4	1 7/8	+1/2	+36.3						
N	CENTRONICS DATA COMP	6-28	16 1/8	+2 3/8	+17.2						
A	CETEC CORP	4-12	10 7/8	-1/8	-1.1						
O	COGNITRONICS	2-20	10 3/8	-1 1/2	-12.6						
SUPPLIES & ACCESSORIES											
N	AMERICAN BUS PRODS	7-23	21 3/8	+1/4	+1.1						
N	BARRY WRIGHT	13-33	32 1/2	0	0.0						
A	DUPLEX PRODUCTS INC	12-27	26 1/2	-1/4	-0.9						
N	ENNIS BUS. FORMS	6-28	23 1/4	-5/8	-2.6						
N	3M COMPANY	49-90	80 1/4	-2 1/2	-3.0						
O	MOORE CORP LTD	26-51	42 1/4	-1/4	-0.5						
O	STANDARD REGISTER	11-34	32 3/4	+1/2	+1.5						
N	WALLACE BUS FORMS	11-33	28 1/4	+1/8	+0.4						

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON;  
L=LOS ANGELES; M=MIAMI; W=WASHINGTON; C=CHICAGO;  
D=DALLAS; S=SEATTLE; H=HOUSTON; K=KANSAS CITY;  
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L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER  
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Ven-Tel security is not limited to password protection. You are secure in the confidence that your Ven-Tel modem is the most reliable and dependable in the world.

Security is the assurance that Ven-Tel has committed the investment in research,

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Security is knowing that the modem you buy from Ven-Tel is the most modern, technologically advanced product available on the market today. It is knowing that when you need help, a Ven-Tel technical support specialist is as close as a telephone call. It is the confidence that Ven-Tel will be there with service and support for your equipment as long as you own it.

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